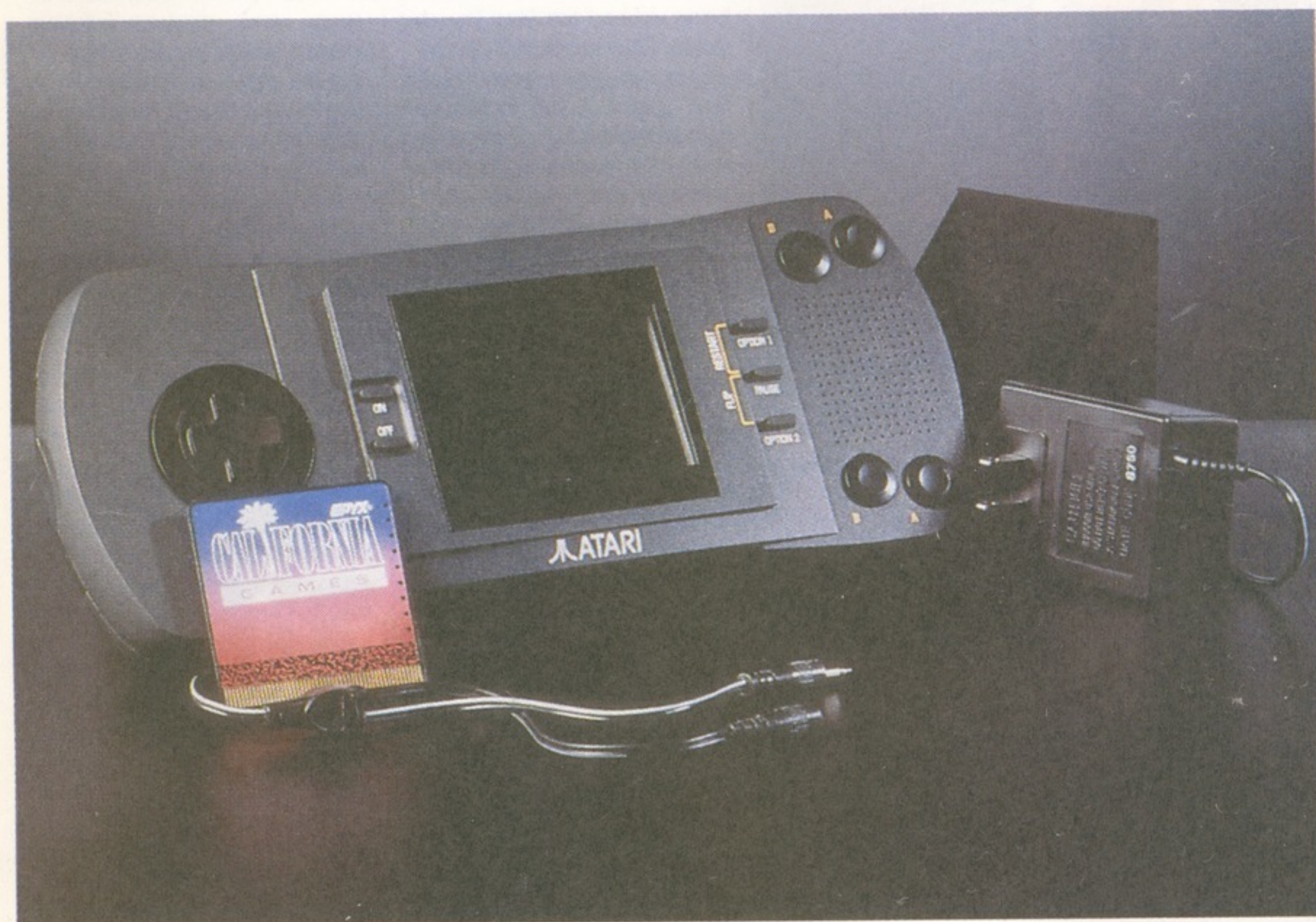


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AMAZING!



World's first colour handheld computer FIRST REVIEW

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HIS MASTER SOUND'S VOICE

The Express guide
to the newest and
best sound
samplers



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KICK OFF!



Best soccer game yet

SHOPPERS' BONANZA!

How you can buy cheapest in
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- Disk dossier
- Les French games
- Neural networks
- Tech Tips

SECTIONS FOR Amiga • Atari ST • PC • PCW • Spectrum • CPC • C64 • QL • BBC • MSX • Atari 8-bit

THE NEW GENERATION

Last week *Express* broke the details of Atari's exciting new handheld games machine. This video tape sized gadget completely wowed visitors to the Chicago Consumer Electronics Show.

This week Marshal Rosenthal gives you the first hands-on review of what is being touted as the first of a new generation of gaming machines...

Put the designers of the Amiga and all their technical expertise together with Atari's price competitiveness and track record. Shake it all about and watch the world's first hand held, high tech, colour LCD games machine emerge.

The history of this saga is fascinating. Enough at least to have the press chasing any and every detail for the past few months. Consider: Epyx decides to get into the hardware business and make a splash. It enlists the aid of two mega minds, RJ Mical and Dave Needle. These two designed the Amiga, a computer which stands very tall indeed when it comes to graphics and sound.

Interestingly, the Amiga was to be an Atari machine until Commodore jumped in. These two companies do not like each other one bit.



• Play it, Sam: Atari boss Sam Tramiel gets to grips with his new machine



Atari's machine has clearly stolen the little machine limelight but Nintendo was not to be outdone. It was showing off its smaller (but black and white) Gameboy (Express passim) to lots of interested punters.

As always that firm was "intimidating" in the space it took up. Apart from the \$89 handheld Gameboy people could also treat themselves to a range of Nintendo merchandise such as, wait for it, Mario Brothers wallpaper and Nintendo denim jackets.

Meanwhile, Nintendo finally looks as though it's going to make a proper go of it here in the UK, having signed over the selling rights to a big

company called Serif. Its track record includes board game Trivial Pursuit. Expect to see lots of TV ads in the run up to Christmas.

Nintendo was sold here by toy company Mattel. That firm's poor performance prompted the Japanese to set up a subsidiary in the UK called NESI. Nintendo is saying NESI was only ever short term and it's always been on the lookout for a good UK agent.

Elsewhere on the console front NEC has unveiled an upgraded version of the PC Engine. The innards aren't substantially different but its Turbo Graphic 16 has been remodelled for the American market.

Mical represents the software engineering - taking numbers placed inside chips and turning them into excitement you can see. Needle looks after the hardware - actually forcing bits of metal and silica to do things. And now they've done it. They've produced the next step up from the Amiga, the world of liquid crystals.

Atari knows a good idea when it sees one and promptly stepped in adding more than just its name to the device with no name. It flexed a few marketing muscles, waved a few wads of cash around and now it has smashed the price barrier with what is provisionally being dubbed the Atari Portable Colour Entertainment System.

Let's run down some of the tech specs. A 3.5 inch colour screen makes for easy viewing and no eye strain. Getting sharp detailed graphics using 16 colours from a palette of 4,096 is quite an achievement for such a small machine. And 64K RAM coupled with 16Mhz speed means one fast baby.

The one pound unit slightly resembles a dumb bell that got flattened at the edges. It's got four channel sound with volume control for those of us getting a bit old, plus a headphone plug. Another plug has been fitted for mains use which will take the strain off the six AA batteries. As is becoming increasingly fashionable you can also plug it into the car cigar lighter. With this machine on your person there's no time for smoking.

Software comes in the form of 16 Mb cards which slot in. You can also link up eight different machines with each player getting first person perspective.

Controls consists of an eight direction joystick and five function buttons, plus dual A-B switches which come in handy since left handed players can flip the screen upside down. The screen resolution of 160 x 102

pixels are usefully intelligent - any more would have made a muddle.

Amazingly this little lot is going to be sold here for \$149. But the most amazing thing is it's all American technology and all produced in the States (except the LCD screen).

When I gave it a try *California Games* was up and running. Whipping the character around the radical Half Pipe I found it moving very fast. Too fast for me since he was sent sprawling. The joystick works just like any other and there isn't really any feel of newness here.

But the feel of the entire unit is solid and it's easy to drift away and start wandering around in little circles trying to get the character to stay on the blasted skateboard. Animation is quite remarkable. The development guys did OK.

The big difference is that this doesn't really feel like a handheld at all. It's more like a full size gaming machine that's been hooked up to a small monitor.

Not having many games to try out is disappointing especially as *California Games* doesn't have too many characters on screen at once. But it's pretty obvious just what 16MHz is capable of when you watch the on-screen action. Games for this machine are going to be killers.

There's really no comparison between this and any other handheld. Colour aside (though I'd say that's pretty important) this has faster animation, quicker game play and more software possibilities waiting to be exploited by the games.

RJ and Dave are always damned good at what they do. This time they have excelled themselves.

Atari's unnamed babe is a winner all the way down the line. This machine, as we say in the States, is a whole new ball game. ■



• Chicago CES: Atari launched among the masses

Euro D-day for fast

Hot on the heels of last week's tough-talking new strategy plans, piracy-busting outfit FAST has decided to attack the European problem.

At a special meeting at the Houses of Parliament last week, Federation Against Software Piracy chairman Roger Tuckett said the body would be taking a Europe-wide perspective.

"We're regarded throughout Europe as a body with the most effect. I realise that there are a lot of cultural differences that will need to be bridged but we are committed to fighting piracy here and on the continent," he said.

Tuckett acknowledged that any efforts would have to be undertaken "as a team" and that attempts would have to "be co-ordinated to be successful".

British piracy has been curbed somewhat by FAST's activities both in investigating individual cases and lobbying Parliament for effective laws. The legal situation is extremely loose in some



• Moving FAST: Tuckett's Euro crusade

European countries where piracy is so bad that software houses have no hope of making a decent living.

Software users often complain of lack of support and commitment here by publishers. In some European countries genuine users enjoy even less attention. ■

Cheap ST console delayed until '91

Atari's promised ST console isn't likely to see the light of day until very late next year, or, more probably, 1991.

Senior bosses at Atari in the US are saying that the project has been put on hold for the moment.

Although reasons are being kept close to Atari chests it would appear to be as a result of the new-found commitment to its little hand-held machine. Atari UK boss Bob Gleadow had stated that

the £99 console would arrive by this September.

It is understood that Atari is so pleased with the hand-held that it wants to direct all energies into making a commercial success of it. Developing the machine isn't a problem since the technology is already there. One Atari insider told Express: "It's just a case of waiting for the right time to launch it. Every product needs to be launched at just the right time." ■

KGB Hacker in suicide tragedy

A West German computer hacker who was caught supplying secret data to the Soviets has committed suicide.

Tragic 24 year old Karl Koch was found last weekend burnt to death at his home in Wolfsburg. Police say he doused himself with petrol and set himself alight. They are ruling out any foul play.

Koch was one of eight hackers rounded up earlier this year in connection with espionage activities

(Express 19). He and his pals had been supplying data to the KGB for up to four years.

In return all had been given money and drugs. But they claimed they had been blackmailed by the KGB.

Koch had not been charged as yet pending an extensive investigation by West German authorities. However, it is thought he would have been charged with a minor espionage offense in due course. ■

AMSTRAD'S CONSOLE INVESTIGATION

A new games machine is being investigated by Amstrad, Express can reveal.

Ideally, the firm wants to show off a new console at the PC Show this September, but time constraints make that unlikely. Amstrad is hoping to tie up a badging deal rather than dive into any exhausting research and development program.

In effect this means that it will take over another company's machine and slap an Amstrad logo on the front. The Brentwood boys have been in tentative negotiations with at least one console manufacturer with this in mind. In the past all its machines have been self originated (except, of course, for the Spectrum).

Boss Alan Sugar declared last February that no new machine would appear from the firm during 1989 and, indeed, that was the intention.



• Tower of babble: Secret plans under discussion at Brentwood?

However, Amstrad is well known for its willingness to change quickly according to market trends and any opportunities which might arise.

The firm can hardly have ignored the frantic activity over the past few months on the console front with manufacturer after manufacturer launching new machines, or else upgrading

versions of their old successes.

For the past four years Amstrad has always been the centre attraction at the PC Show, launching new machines every year. The firm regards it as an important focal point for its plans.

This year has had its problems with the PC200 showing moderate success at best, and the high end Amstrad PCs being dogged by delays and problems.

An uncertain year in its computer and satellite disk campaigns have prompted drastic dips on its share

price. Last Friday shares dipped by 9.5 pence resting at a three year low of 83.5p. Four months ago its shares were trading at 181p.

The only clues about Amstrad's plans for the PC Show are centred around the PC Show. Contrary to curious reports elsewhere Amstrad is not planning to scrap the machine. Indeed, some sort of relaunch is expected in September. "We'll be giving the PC200 a lot of backing in the autumn," came the Amstrad line. As always, the firm is not talking about any new projects. ■

Miami Twice

Miami Vice is once again to be the subject of a computer game.

Softek has decided to convert Crockett and Tubbs to computer format with the game likely to arrive later this year. A Miami Vice game appeared in 1985 courtesy of Ocean. Unfortunately it was panned by the press and didn't make much impact.

But Softek is confident it can turn the TV Show into a "good" computer game. ■

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7CO COMMENT

Amstrad to console itself?

Rather like McDonalds, it's fashionable to be disparaging about Amstrad and its box-it-up-and-flog-it mentality (though McDonalds staff show infinitely more warmth and sincerity than Amstrad's). Amstrad's shares are dipping again and few people are shedding tears.

But for all its unpleasantness, Amstrad is a British company which had, up to this year, been beating the rest of the world with the relentless brute force of a West Indian bowling attack. But problems with its unspectacular PCs in the more 'legitimate' computer market have seen a downturn in its still vast fortunes.

The boys at Brentwood need to reaffirm their grip on the low end market - and that means games. Atari and Commodore are running amok with the ST and Amiga, and games consoles (such as the new generation of hand-helds) threaten to hit Amstrad's CPC and Spectrum all round the park.

What Amstrad needs is a console. It will blast the company back into the game by being cheap and superbly well marketed; all Amstrad needs is to find an innovative console to market. In the present console-heavy climate that should be perfectly possible for Alan Sugar and his side.

Savings on paper

Express has moved on to new paper in a small bid to go ecological; the new stuff is non-chlorine bleached to cause less damage to the environment. (No chance of using recycled paper yet - that's still much more expensive than fresh paper - though all the paper we use in our offices is recycled). It's simplistic, but nevertheless true, to say that if we don't make the future Green, it will be black.

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BUNDLE BOOST FOR COMMODORE 64

A brand new games bundle has been unveiled by Commodore for its ageing 8-bit micro the C64.

The 64 has long been backed up with freebies in order to attract new buyers. Purchasers are often first time buyers - Commodore clearly has this in mind with lots of popular names in the new pack.

Dubbed *The Sporting Brainbox Pack* it offers ten games of varying quality. On the sports side buyers will get

Peter Beardsley's *International Football*, Frank Bruno's *Boxing*, Ian Botham's *Test Match*, Daley Thompson's *Olympic Challenge* and a "mystery game".

The other side contains Domark's massive seller *Trivial Pursuit*, *Split Personalities*, Jeffrey Archer's *Not a Penny More*, *Not a Penny Less*, *Bob's Full House* and an unnamed title.

The bundle will come with a joystick and datacorder and

will cost £149.

Whilst lacking the quality rating of freebies on the Amiga and ST this pack is almost certain to attract new game players. The C64 confounded everyone last Christmas as punters flocked into high street stores and stocks ran out.

Talk of the impending demise of 8-bit machines still appears to be a fallacy as the 64 (as well as the Spectrum and CPC) is still the focus for parents looking for a good,



• Pack attack: New bundle for C64

cheap, value added first time computer. The offer is likely to run until Christmas and probably beyond. ■

● Snippets

• PC owning pilots will be able to feel the freedom of the skies next month when US software company SubLogic launches *Flight Simulator: Trainer*. Soaring at an expected price of \$195 it's designed for current or prospective pilots wanting a little extra practice and is fully compatible with SubLogic's huge line up of scenery and supplement disks.

• British companies spent an average of £2.8 million on computer technology last year and should spend about £3 million in 1989. Analyst Price Waterhouse reckons it's a healthy change from the days when management was spending too much money on improving technology which didn't improve business performance.

• Haydock dealer Saddler Communications is to hold an open day on Thursday 29th June. On show will be loads of Amstrad kit as well as Commodore, Philips and Atari stuff. Technical and sales people from the various companies will be on hand to help you with enquiries. More on 0942 719122.

• A new comms software pack is being sold here which, it is claimed, doubles modem throughput. MagicSoft's MTE costs £69 and is being sold by Digital Matrix. "With this users do not need an expensive high speed modem to take advantage of reduced on-line charges and lower telephone bills," say Matrix. Contact 021 704 1399.

• Logotron's sideways scrolling shoot 'em up *StarRay* is to be sold Stateside as *Revenge of Defender* capitalising on the success of the brilliant old coin-op it resembles.

UK tech grads whisked away

Britain's top notch computer graduates are being wooed away by European and Far Eastern companies promising big money salaries.

Universities throughout the country are the target for employers hoping to pick up the best of Britain's technical boffins. The reasons for this are:

- English is the dominant language in technological fields.
- Britain's graduates are highly regarded throughout the world especially in computing.

• European firms are prepared to pay graduates more money than British rivals. Even tax cuts here for top bracket workers is not enough to keep them back.

• Foreign firms are more likely to promote technical experts to senior positions such as the board. Those positions are more likely to be held by marketing people in the UK.

• Recruiting in the UK is easier than elsewhere due to an efficient system throughout the university network.

• A demographic downturn on

the continent is spurring employers into looking elsewhere for graduates. West Germany's graduates have dropped by 45 per cent in the last decade compared with 36 per cent here. Skilled young people are even scarcer in Europe than in the UK.

Whilst big salaries in European countries is good news for clever graduates it's hardly what the doctor ordered for British companies. For the moment they are losing out in the battle for good staff. ■

Calling all coders



• Receiving you: Edgar lines up new games

A new games software company is on the lookout for good ideas for publication.

Cumbria based Videocoders has just set up with the aim of launching a series of £2.99 games on the Spectrum, C64 and Amstrad CPC.

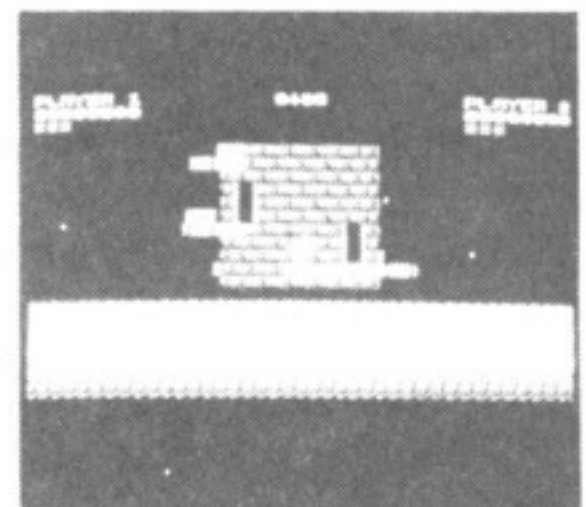
Top of the shopping list are football management games, beat 'em ups and simple shoot 'em ups.

"We'll be happy to evaluate software from anyone out there with a view to publication," said director Jonathan Edgar. "Our programmers will be paid well and their games will also be going to other countries. I'm sure it will take off. Eventually we could be setting up a full price label."

Budding budgeteering programmers should call 0228 35208. ■

Action combo

Veteran software company Hewson will give gamers the chance to relive six of its most popular titles next month when it releases *Heat Wave*, a games compilation package for the Spectrum, C64 and CPC. For £13 you get *Nebulus*, *Firelord*, *Rana Rama*, *Zynaps*, *Netherworld* and *Impossaball* (Spectrum/CPC) or *Alley Kat* (C64) on cassette, with C64 and CPC disk versions currently under consideration. ■



• Nebulus: Back in the pack

Oxfam games plea prompts action

Oxfam's plea for donations of second hand software in order to help save the starving has prompted hundreds of companies and individuals to make an effort.

Already thousands of pounds of software has been brought forward. The international charity organisation asked for any donations - particularly of games software - last month. Already software houses, magazines, retailers and distributors have sent in games. Offers from individuals are not so substantial but still "coming in thick and fast".

Oxfam preferred not to reveal which companies had been the

most generous simply saying: "The response has been really good and we'll be selling software through selected London shops during the summer." Plans are afoot to sell games through outlets in cities around the country.

Oxfam has ventured into home computing on a smaller scale in the past with a healthy response from gamers. But the organisation is urging anyone with old and unwanted software to visit to an Oxfam shop to make a donation.

Monies raised will "help people suffering from hunger, disease, homelessness and extreme poverty around the world".

Virus blackmail

Two computer technicians are currently standing trial in Madrid for allegedly infecting municipal computers with a virus.

The duo infected machines all over Spain with a specially devised rogue program and then offered to sell a vaccine to various local authorities. The blackmailers are being charged with unauthorised reproduction of computer programs and plagiarism. This is the first computer crime case in the country.

Hotel guide for PC



• Open Door policy: Now your PC can find you a hotel

PC owners who often hit the road are being offered a package which details 1,354 hotels, each within a radius of any one of 23,000 British place names.

Open Door's size apparently caused some development headaches for software publisher Lucidus with maps and the like having to be tightly squeezed into the memory using specially created utilities.

Hotels featured can be checked against any combination of up to 40 requirements - such as facilities available. Hotel information such as car hire details can also be called up at will.

The complete system costs £250 which includes two updates in the first year. Lucidus is now attempting the mammoth task of a world-wide version. More on 0993 882660.

TOP FIRMS TO HIRE HACKERS

Frightened firms in the financial hub of Britain are employing hackers to go through their computer networks and reveal all the loopholes.

Known as Tiger Teams, the gangs of hackers are employed by security consultants. Top brass in big money companies then employ them to break into their own systems. Only one or two board members within the company will know about the mission.

Tiger Teams are called after American counter espionage agents.

City chiefs are so worried about the threat of hackers that they have actually been buying the silence of some who break into their computers.

According to the Computer Industry Research Unit at least six big money companies have signed agreements with hackers. The hackers are offered amnesties if they agreed to return part of the money. It is understood that some of the losses exceeded

£1 million with only a tenth of that returned.

The firms are scared that any prosecutions will result in a loss of business as customers learn of the insecurity of their computers. "Companies who feel vulnerable are running scared by agreeing to these immoral deals. Their selfishness is storing up serious problems for everyone else," said senior computing consultant Peter Nancarrow.

But these companies could be prosecuted themselves for perverting the course of justice.

"Employers could find them-



• Put a Tiger in your bank: City firms are recruiting hacker teams

selves in very deep water by such strenuous efforts to protect the credibility of their image. We doubt very much of these agreements are watertight for they have never

been tested in the court. We believe they offer no protection" said leading computer cop Detective Inspector John Austin.

One assistant programmer at a merchant bank diverted £8 million to a Swiss bank account and then returned £7 million in return for amnesty.

These activities have prompted City firms to employ mercenary hackers to sweep through systems. This can take up to four months and costs in the region of £50,000.

When the Tiger teams are done some computer managers don't even know they've been in.

Youth banged up

An 18 year old hacker on the US has been jailed for nine months and fined \$10,000 for illegally penetrating US Defence and AT&T computers.

Herbert Zinn Jnr was only 16 when

he began committing the crimes. He copied \$1.2 million worth of programs and destroyed files valued at \$174,000. He also published secret passwords and hacking tips. He'll spend his

sentence in a special youth facility in South Dakota. If he had been an adult when the offences were committed Zinn would be facing 13 years in the slammer with fines of up to \$800,000.

TOP 20 Full Price GAMES

- 1 Robocop** OCEAN
Spectrum, C64, CPC, ST, Amiga, Others
- 2 Microprose Soccer** MICROPROSE
Spectrum, C64, CPC, ST, Amiga
- 3 Run the Gauntlet** OCEAN
Spectrum, C64, CPC, ST, Amiga
- 4 Emlyn Hughes** AUDIOGENIC
Spectrum, C64, CPC
- 5 Dragon Ninja** OCEAN
Spectrum, C64, CPC, ST
- 6 Out Run** SEGA-US GOLD
Spectrum, C64, CPC, ST, Amiga, Others
- 7 Operation Wolf** OCEAN
Spectrum, C64, CPC, ST, Amiga
- 8 Football Manager 2** ADDICTIVE
Spectrum, CPC, ST, Amiga, Others
- 9 Populous** ELECTRONIC ARTS
ST, Amiga
- 10 Forgotten Worlds** US GOLD
Spectrum, C64, CPC, ST, Amiga
- 11 Kenny Dalglish** COGNITO
Spectrum, ST, Amiga
- 12 Crazy Cars II** TITUS
Spectrum, CPC, ST, Amiga
- 13 Running Man** GRAND SLAM
Spectrum, C64, CPC, ST, Amiga
- 14 Renegade 3** IMAGINE
Spectrum, C64, CPC
- 15 Silkworm** VIRGIN
Spec. C64, CPC, ST, Amiga
- 16 Gunship** MICROPROSE
Spectrum, C64, CPC, ST, Amiga, Others
- 17 Double Dragon** MELBOURNE HOUSE
Spectrum, C64, ST, Amiga, Others
- 18 3D Pool** FIREBIRD
Spec. C64, CPC, ST
- 19 Middle Earth** MELBOURNE HOUSE
Spec. C64, CPC, ST, Amiga, Others
- 20 The National** D & H GAMES
Spectrum, CPC

TOP TEN Budget GAMES

- 1 Enduro Racer** HIT SQUAD
Spec. C64, CPC, ST, Others
- 2 Shanghai Warriors** PLAYERS
Spec. C64, CPC
- 3 Daley Thompson** HIT SQUAD
Spec. C64, CPC, Others
- 4 Treasure Island** CODE MASTERS
Spec. C64, CPC
- 5 Rambo** HIT SQUAD
Spectrum, C64, CPC
- 6 1942** ENCORE
Spectrum, C64, CPC, Others
- 7 Road Runner** KIXX
Spectrum, C64, CPC, ST
- 8 Turbo Esprit** ENCORE
Spec. C64, CPC
- 9 Spy Hunter** KIXX
Spectrum, C64, CPC, Others
- 10 Fast Food** CODE MASTERS
Spectrum, CPC

RE re-entry • NE new entry • Last week's positions
Compiled by Gallup
The charts shown are based on the Open Market, that is retailers who stock a broad range of products. All charts shown are copyright of Gallup.

Life saving computer

Doctors can now plant radioactive capsules inside a person's head which eat away fatal brain tumours - thanks to computer technology.

Previously, doctors dared not insert large doses of radioactive materials inside a patient's head. However, a computer which provides three dimensional pictures of the brain and tumour allows surgeons to place the seed in exactly the correct position.

Now only cancerous parts of the brain will be affected by the lead capsule whilst healthy areas go undamaged. The £125,000 computer would normally be used for high

tech aircraft design but thanks to a generous donation one London hospital can use it to save lives.

The Ardent Titan computer was donated to St Thomas's Hospital in Lambeth in memory of Mick Shields - former managing director of Associated Newspapers - who died of cancer on Christmas Day in 1987.

Any attempt to work out the necessary calculations manually would be utterly impossible. The computer itself is a staggering 100 times faster than previous equipment. St Thomas's hopes to operate on 25 tumour cases a year giving every one an extra lease of life.

Poll tax tracker

People unable to pay the dreadfully unpopular Poll Tax are to be tracked down using a special 'debt collection' software package.

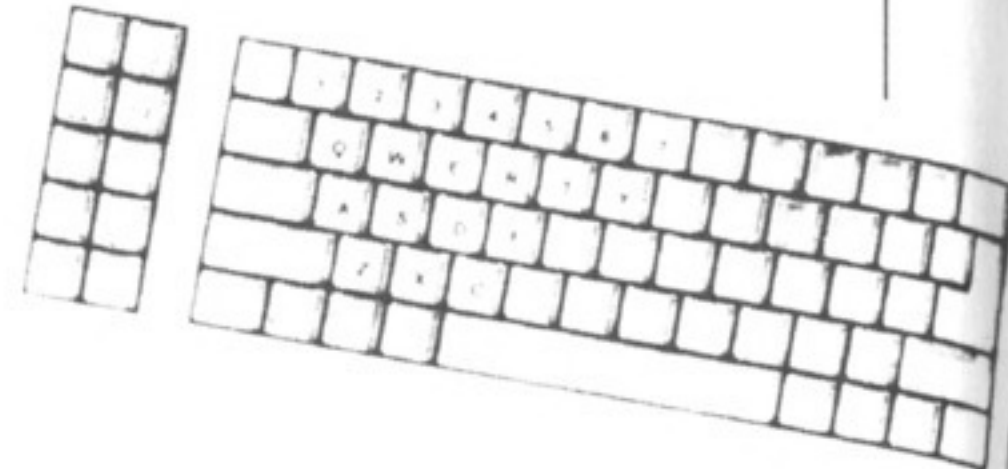
DC4 is already being installed in various local authority centres and it can handle "any number of

debtors". DC4 from Sherwood can also hold all history and documents relating to each individual debt. Authorities will have to spend between £10,000 and £20,000 on the package which can run on micros utilising UNIX, CDOS and MS-DOS.

MSXtremely MSXciting

Games starved MSX owners will soon have the chance to play four top games thanks to the kind people at Virgin/Mastertronic - Xenon, Double Dragon, Road Wars, and Terrorpods are all due on the Melbourne House label, priced at £9.99 on cassette.

DON'T FORGET TO TELL SAM



How would you like to have a financial stake in a computer manufacturer? If you've a few hundred pounds to spare here's your chance.

A 66 per cent flotation sale has just been announced by Miles Gordon Technology to any budding investors. The firm hopes to raise £500,000 which will help finance the launch of its SAM Coupe computer.

MGT won't become an ordinary company with which to buy and sell shares though. The sell off is part of the Government's Business Expansion Scheme designed to give small companies a chance to get their products on to the market.

Investors will be asked to buy a minimum stake of £500 worth of shares (although £1,000 stakes will be given preferential treatment). Then, after five years, they will be able to rake in whatever those shares are worth.

The advantage for shareholders is that they can gain tax relief and they aren't obliged to pay capital gains on any earnings the shares make.

The disadvantages are that BES purchases are, by their very nature, a bit touch and go. They are designed to help small companies make an impression with new products.

Any new product is always a risky venture especially when it happens to be a low cost computer. The City is still nervous about computers (Amstrad's dodgy share price will testify to that).

But if the SAM Coupe takes off it could mean mega bucks for canny money makers.

MGT's three directors will retain the other 33.3 per cent of the company. Not surprisingly the firm is "extremely confident" that its baby will take off around

• Coupe: Money spinner?

the world. But it needs money to market the Coupe and pay for the costs involved in manufacturing.

"The technology's been ready for a year now but finances have kept us back," said director Alan Miles. "But we've made the personal sacrifices needed. Demand for the machine might even exceed our own expectations." MGT will become Miles Gordon Technology plc.

The sale is being arranged by reputable firm Johnson Fry Corporate Finance Ltd. If you want a prospectus write to Dorland house, 20 Regent Street, London, SW1Y 4PZ.

The Coupe should arrive in September with a price tag of £150.



YOU GET MORE FOR YOUR MONEY THAN JUST OUR NAME

MICRO MEDIA SEAL!

Micromedia are the ONLY Company committed to customer support for the fabulous PC Engine games console.

1. For a start we are an established company who will be around to look after you in a year's time, and not "gone with the wind" (and your money) - Micromedia are suppliers to the Computer Shops. Chances are, you'll find us the only Company supplying them with software for our customers too.
2. Micromedia's own company "Engine-eering" repairs only our machines - in fact right up to full replacement internals - and is presently the only professional repair source in the country.

3. The PC Engine user club is only available to Micromedia owners (who are automatically logged onto our computer) and is FREE. You will get the monthly magazine and access to our telephone hotline, now and into the future.
4. Picture quality and hardware reliability are far superior. Don't take our word for it, your local computer shop will soon be stocking it (and if not why not), so see for yourself. Alternatively, write for details of special mail order offers.

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WINTER'S TAIL



JIM DAVIS

THE
EDGE

The ski animal's coming your way soon

THE AIS HAVE IT

Artificial intelligence – or AI – is coming into our lives more and more, from the High Street shop to your home PC. Neil Booth went to the Expert Systems Conference at Novotel last week to get a glimpse of what's to come...

The idea of computers being 'intelligent' is one that most of us treat as a joke. When you get threatening letters because you haven't paid your gas bill of £0.00, or mailmerged competition offers which begin 'Dear 23 High St, Great news!', you might think artificial stupidity is a more accurate term.

But making computers that can think – or at least, be active seekers of information and givers of advice based on what you tell them instead of passive tools – is big business. The Expert Systems Conference was full of smart people in suits and American accents talking about inference mechanisms, backward chaining, cyclical execution and dynamic slot creation.

Expert Systems are not really artificial intelligence. They are knowledge bases – a sort of smart store of knowledge entered by humans which can advise users on decisions based on that knowledge. You ask questions of the computer, or type in answers to the questions it asks you, and it advises on what you should do.

Expert Systems are coming in everywhere. One advises transport agencies how to move radioactive loads and details the regulations they must observe. Another in use in the US trains

judges by advising them on how to reach decisions over test cases. Doctors can use expert systems to give quick diagnoses. Other applications include agriculture (advising on crop and livestock management), broking, engineering (diagnosing faults in structures), finance, pharmaceuticals, foodstuffs, teaching and so on.

The computer can store a vast quantity of information and access it all; a doctor may miss one of the possible diseases linked with the symptoms a patient has, whereas the computer will unfailingly check all the possibilities.

Everyone is keen to point out that Expert Systems aren't there to replace anyone – they're merely a tool that human experts can use to help them make a decision. They can also preserve 'rare skills' – the knowledge and expertise of someone who retires or dies.

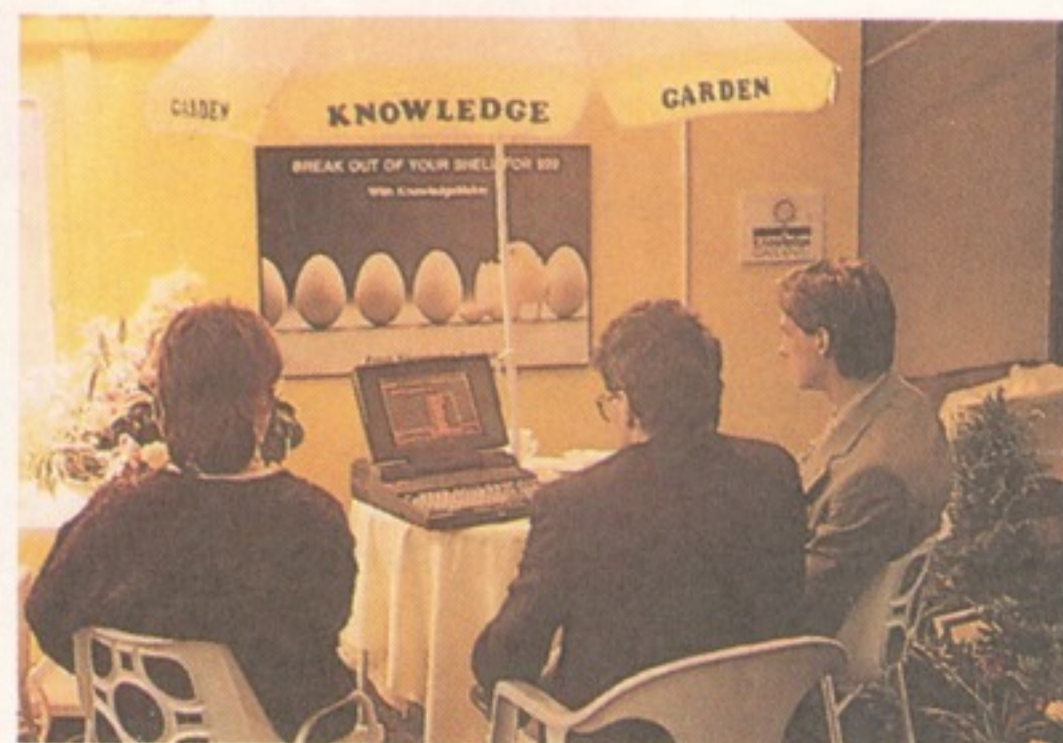
Most of the programs are written in languages like Lisp and Prolog and run on mainframes, but there are quite a few PC AT based systems around. They're strictly for businesses, unless you happen to have a few grand to spare!

Neural impulse

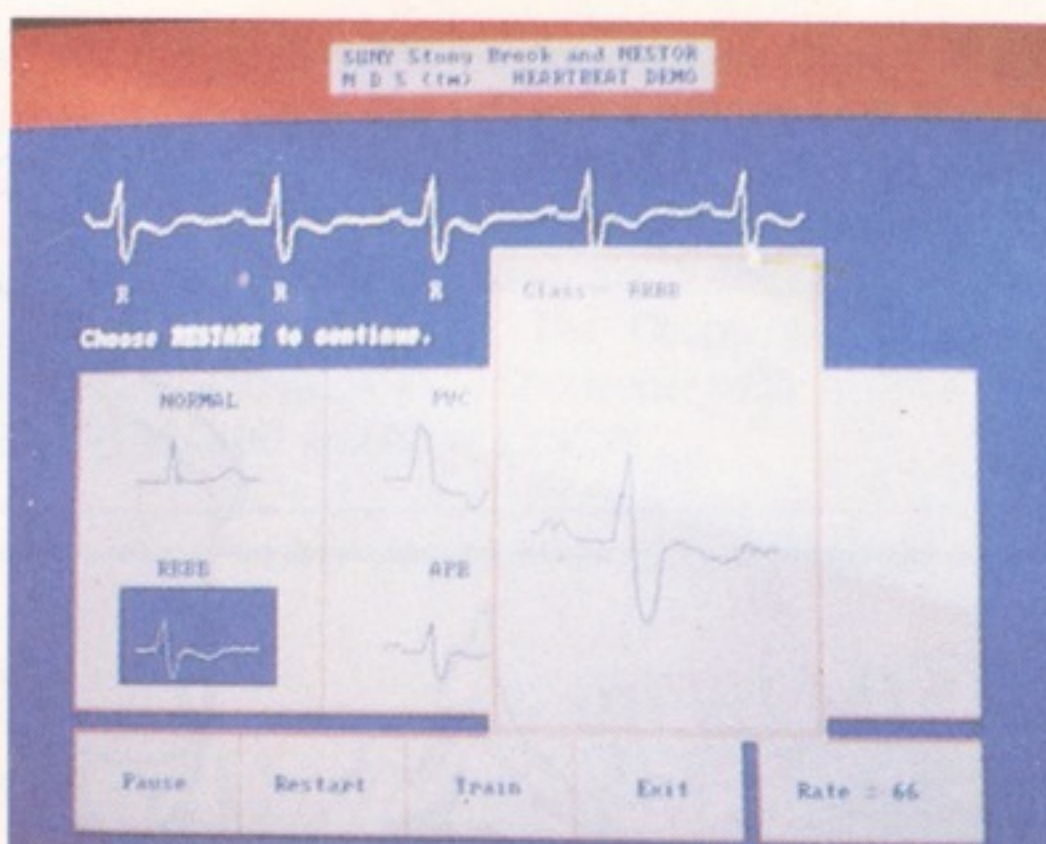
Neurocomputing claims to be Britain's leading supplier of neural networks. These systems learn in the same way as humans – by making connections from experience.

Consider the way you learn to read numbers; you learn that all shapes of a certain type are called '3', others '9' and so on, and make your own inferences as to what defines a 3 or a 9. A program on display – running on a PC AT – did just that; you input five versions of each number from one to ten – hand drawn on screen with a mouse – and the neural system 'learns' from that what the numbers looked like generally and can recognise them from then on.

The numeral recognition system is a mere £500; the system on display which advises on whether or not to give mortgages "better than any human



● Suppose you're buying a hi-fi. The assistant can run up an Expert System on a PC which asks you questions about your requirements – what sort of room you want it for, how big it is, how much money you want to spend and so on. The program advises you of the best choices.



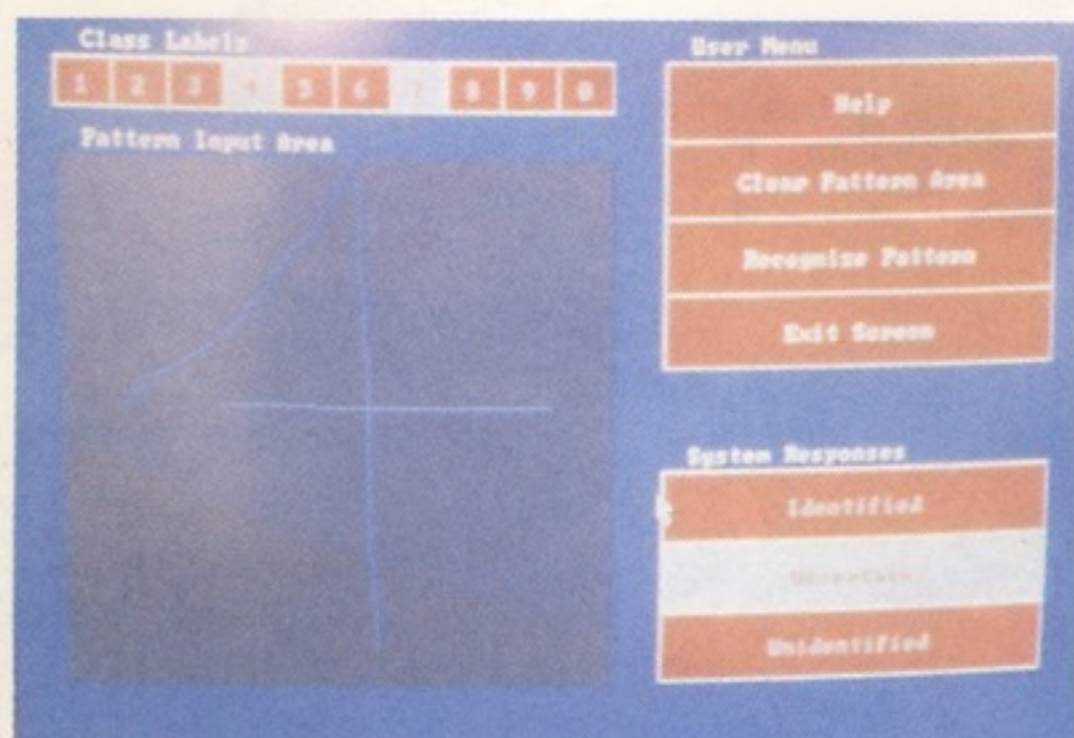
● This neural system looks at patient's heartbeat patterns on-screen and can instantly detect heart conditions from the shape of the trace.

expert can" was a snip at £250,000 per licence. (If you're interested in finding out more on neural networking, phone the company on 0962 842048).

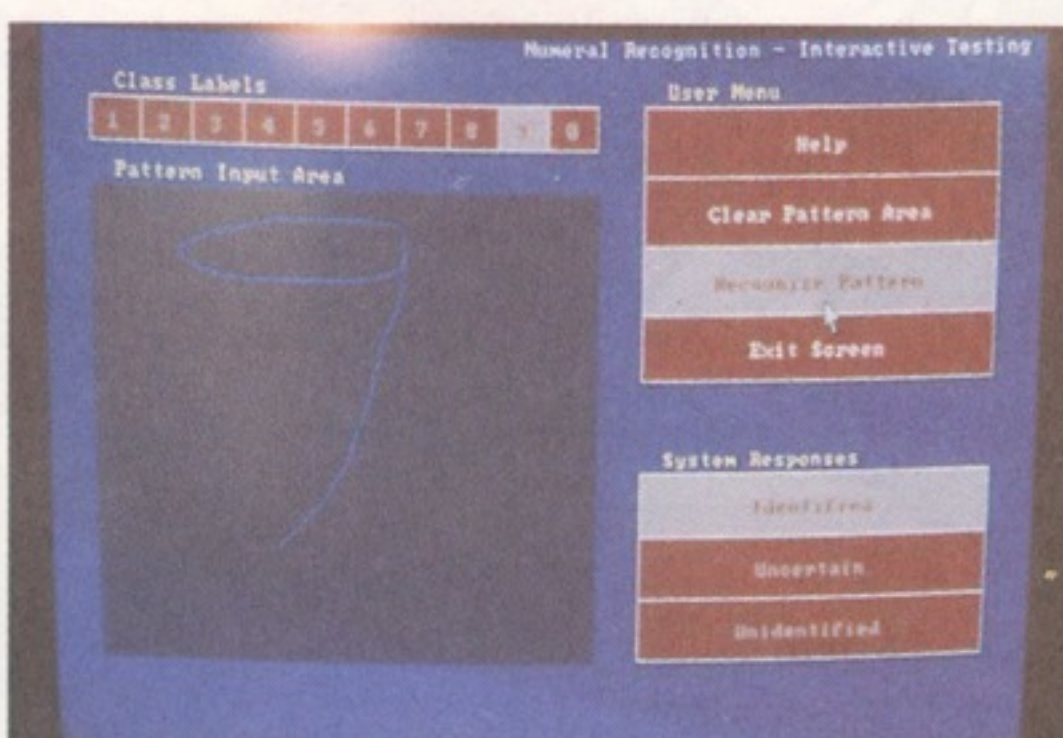
It's all a vision of the 90s. But, as David Robertson explained, neural networks have been around a while. "It started in the 50s. There was a peak of interest in the late sixties, then a decline. But now that technology has caught up, there's a surge again." He numbers all the top 100 UK companies among his customers – "including all the clearing banks and building societies" – and neural networks are reckoned to be a billion-dollar business by 1992.

As he was keen to point out, neural network systems won't replace anyone. "They're just another tool, but a very powerful one." A great advantage of the neural networks is that they don't have to be programmed, they just learn from large quantities of input information. So they can be used in 'instinctive' situations such as insurance underwriting, where humans themselves, however good, may not be able to define any 'rules' for their job and so couldn't program a computer to do it.

AI is going to be a part of our lives in the nineties. It may not be the dishwashing robot type, but it'll be there advising, and helping experts to advise us, on which pensions to go for, which hi-fi to buy, and what diseases we've got. It'll be validating our signatures in the banks and shops, checking our passport pictures at the border. And the good news seems to be that, with ever more powerful home micros, AI is going to be more and more available for the home or small business user. ●



● The numeral recognition system can recognise all the numbers in anyone's handwriting, even say when it is uncertain (for a scrawled figure halfway in between a 4 and a 1, for example) and also say when it can't recognise anything (for a squiggle). A genuine neural network – on a PC!



Such a system has great potential in signature recognition, in banks and shops taking your credit cards.

A similar system also being displayed at the conference could check people's passport photographs against the real thing – instantly.

Want to know more? Say AI

If you're interested in finding out more about AI, there are some nice introductory books by Forsyth and Naylor called 'The Hitchhiker's Guide to Artificial Intelligence', published by Chapman and

Hall for £10.95.

They are full of programming examples in BASIC (yes, BASIC, you don't need Prolog or Lisp or anything!) and are available in Amstrad BASIC, BBC BASIC, IBM BASIC and

Apple BASIC editions. ISBN numbers:

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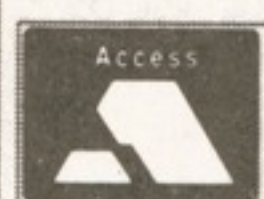
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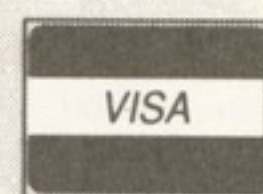
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- If you enjoy your Atari computer, you'll love the Atari Computer Show.

LEAVE ME A LOAN

John Hunter (letters, Express 29) mentions in passing a scheme for students to buy computers (I assume it means cut price). Please could you tell me where to write to for details, as I am intending to buy an ST in the next few months.

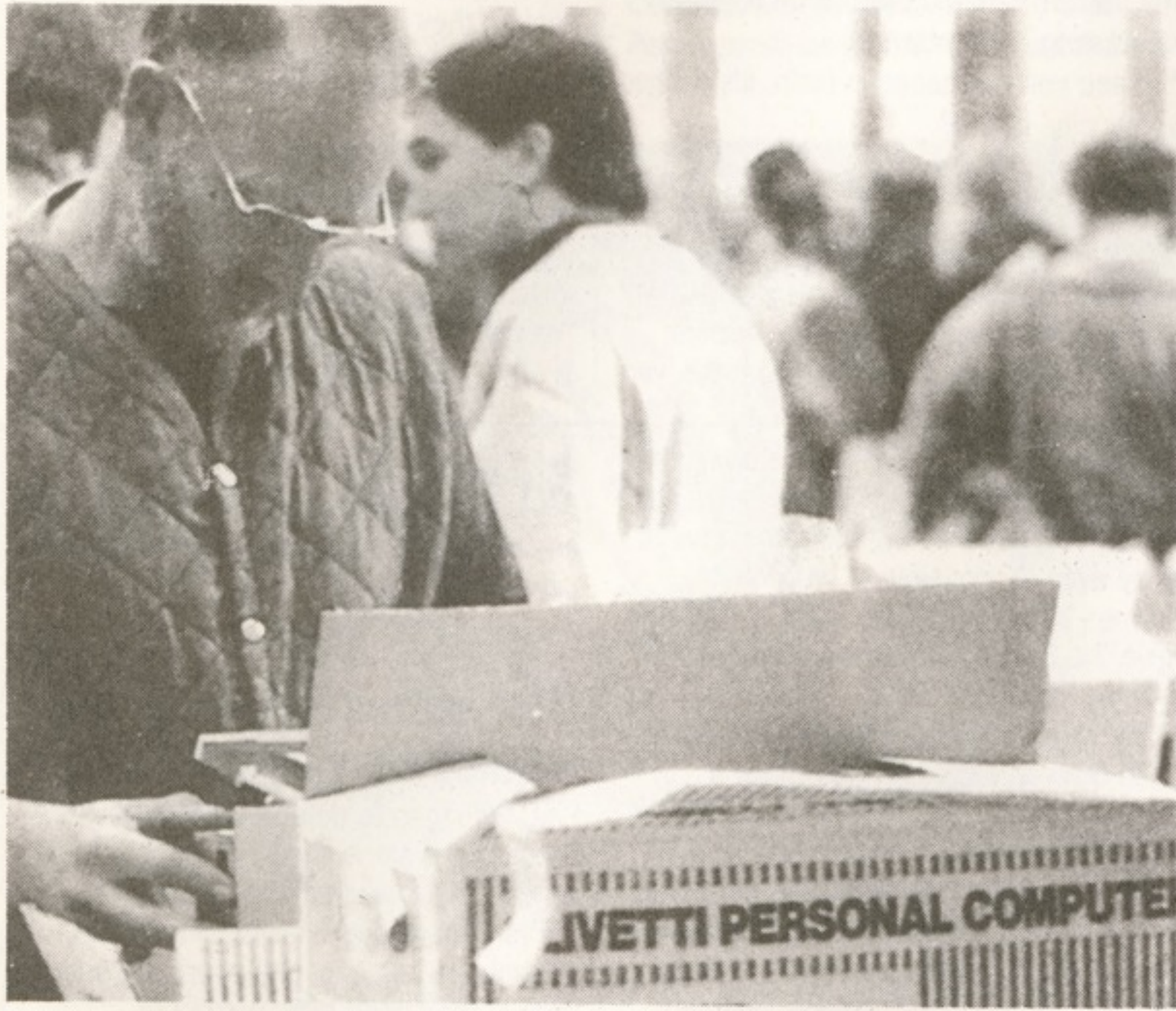
SJ Phillips, Wirral, Merseyside

● What you can get is student discount and an easy terms loan. Details from the NUS on 0457 468003.

What I would like to do is to hack into the DHSS and implant viruses to mess up this bloody poll tax. By the way, I really do live in Cambridgeshire, but I'm not giving you my address. You might send John Boy round. I hope I can count on the support from other hackers on this subject.

The Mad Man, Cambs

● I don't suppose you could hack in to the AA's computers and remove my name from their Prize Draw mailing list, could you?



• The world ends at Birmingham, according to computer auctions

LET'S HAVE SOME AUCTION

On reading your article about computer auctions by Jerry Glenwright (by the way, an excellent article) I discovered to my horror that there were no addresses for computer auctions in the north of England. The northernmost address was in Birmingham, which is classed as the Midlands. (Ho - no, not the great north/south divide again!).

Could you please tell me and other readers from the north of England of any northern computer auctions. (By the way, your magazine does reach the north).

Anthony Bailey, Leigh, Lancs

● As far as we know there are only the three companies we mentioned in the article doing regular auctions, all based in the south. If anyone knows of auctions in the north we'd be delighted to hear.

HACKED OFF

I am sorry but I can not contain my anger any longer.

I am a hacker and have been for the past three years. Emma (can't you tell I'm a Tory?) Nicholson with, "We must succeed - hacking is a real threat, blah, blah, blah" (Express 25). Doesn't it make you throw up? It gets worse, what do we get in issue 30? Detective Inspector John Austin of New Scotland Yard wanting to capture hackers like me.

I can see nothing wrong with hacking (if I did I would not do it). As to his reckoning that 90% of hacking will stop, it won't. It will just bring in an element of danger, and more and more people will start hacking. I'll carry on hacking. No wonder we can't see John Boy's face in the photo. He'd have hackers following him home.

QUICK POINTS

- 1 Don't let the lefties force Ken Mosley out. He's great.
- 2 Bet you the 16-bit PC Engine is launched at the CES show.
- 3 I've got a great way of stopping piracy. Less protection should be put on the disk - but if the program is not accessed in a certain way, the drive should start saving and wipe the disk! If protection tabs were on, the program could just crash. That'd stop 'em.

Barry Newton, Wigan, Lancs

● Ken says he has no interest in politics and just 'speaks plain common sense'. I think he has his own ideas on stopping piracy - see the back page this week.

There was a version of the 16-bit PC Engine at the CES show, but I would not like to encourage gambling in Express.

TWO ROMS DON'T MAKE A RIGHT

I just thought I would let you know the latest info on Atari's TOS 1.4. After my abortive letter attempt the other week, I decided to ring Atari customer services department at Slough.

This is what I was told about TOS 1.4: "Time release date for the new ROMs for upgrades is 3 or 4 months away at present, as priority is being given to installation in new machines until the supply of ROMs improves. The price of the ROMs has not been fixed as yet."

The chap I was speaking to took my name and address and said I would be informed as soon as the ROMs were available. So it looks as though there may be some hope on the horizon for my upgrade.

Clive Parker, Bristol, Avon



Dear Reader

More pages packed with another selection from our postbag and Rob Ainsley's replies. Have you got something to say? Make your voice heard in computing's liveliest letters page! Send your contributions to: **Express Mail, 4 Queen Street, Bath, Avon BA1 1EJ**

PS. Sorry, we just don't have the time to give personal replies, whether you include an SAE or not. We're too busy putting Express together!

Bognor off

I read the article on Users Groups with interest. Mr Glenwright obviously has never attended the Bognor Computer Club. If he did it would be a different story. Upon arrival I was subjected to rudeness and downright abuse.

With respect, the secretary and a few others were very friendly, but the general atmosphere was 'this our 'clique', so **** off'. Just because someone wears a leather jacket and doesn't listen to acid house music, is this a reason to be anti-social to them?

Come on folks, we've got to stick together. Most people's image of a computer user is either a hacker, 'mindless' games player or a



furtive 'self-manipulating kid'. These kinds of actions only reinforce these stereotypes. We all know that computing is fun so why not spread the word, instead of being so self-centred.

I'd love to know what other people think about these points. Alan Reed, Bognor Regis, West Sussex

● The Bognor boys are not coming out of this well. Get your act together, you lot, or we'll send 'Hitman' Haynes round.

Anyway, Alan, drop us a line, tell us what your machine is and to make up for it we'll send you a piece of software as the sender of this week's prize letter.



• Are user groups nice and friendly, like this one, or full of ignorant yobs who listen to House music? Go to Bognor and find out...

ATTACK OF NORTHIA

I still get a laugh from re-reading the Eric Lombard piece (Express 14) occasionally. Just goes to prove I suppose that at the end of the day if you want a real figure of fun you can't beat a northerner.

Not all northerners are figures of fun of course, especially those who see sense and move south.

Some of the letters you publish worry me.

M J Adams, Ealing, London

So far in the back pages we've used as figures of fun Japanese, Americans, Northerners, Southerners, Lawyers, Doctors, Art critics, the BBC, Estate Agents, and Yuppies among others, so I wouldn't say we were particularly biased. Maybe it's time the Welsh, Irish, Scottish and a few racial minorities got the treatment as well.

Express has a strong northerner contingent. Andy Storer is from Sheffield, Rob Ainsley from Hull and Jerry Glenwright from Sunderland.

ALAS, POOR ORIC

Could you please tell me where I can obtain software for my humble Oric? Your brilliant mag is my last hope.

S Briglin, Paisley

Well, you could try the Oric User Group, IOUG. The address is 1 Kingsway Crescent, Burnage, Manchester M19 1GA.

BACK ISSUES

I am doing a GCSE Business Studies course at secondary school. After writing to Romantic Robot for help on my project on the computer industry, they replied but



• Where can you find software for the Oric?

could be of no help other than to mention a recent issue of your magazine in which there was a 'detailed financial analysis of a software company' (their words, not mine.)

I do not normally get your magazine, and after searching around for several days in the local shops I could not find the issue mentioned. I would be most grateful if you could tell me how I could acquire the issue, (which I believe to be number 28) or the article itself, as this would be of great use in my project. Matthew Whitton, Peacehaven, East Sussex

Back issues are available from The Old Barn, Somerton, Somerset, TA11 7PY, for 75p each inc. p&p. (Only recent issues may be available). And yes, issue 28 is the one you want.

If anyone else has trouble getting Express, the first thing to do is to pester your newsagent to take it, and the second to tell us. We want to get our magazine out on the shelves too!

TREADING THE BOARDS

1. In reply to Michael Brown of Cheshunt, Herts' request for bulletin board numbers, I have a collection of over 400 of these, and would be pleased to send him a copy (and anyone else interested) if he could send me an SAE. (Onslow House, Weston Road, Bath).

2. Software piracy - I wish people who do would shut up and get on with it. I really don't care if some people want to play

games without paying for them, but if they go around boasting about it, they deserve to get done by FAST.

3. A friend of mine recently had the bright idea of sellotaping two floppy disks together to copy from one to the other in a single drive. I wonder why his drive didn't work too well afterwards?

4. Two raised fingers to you, Joel Grounds of North Wales. Archie Basic is not faster than 8-bit machine code. You are right, however, in saying the Arc is superior to the Amiga or ST, and I will set my battle-hardened Beeb B on anyone contesting the matter.

5. I see you are based in Bath. It's a lovely city, isn't it?

Rafael Jay, Bath, Avon

Thanks for the offer about the BB numbers. Bath is OK, though I'm not over fussed with the new local bye-law which makes it an offence to drink in public (i.e. you

ARCH RIVALS

It's great news to hear about the coming Archie/Atari 8 bit column. I am an ardent Archie fan, but never thought you would give us our own column. I would also like to congratulate you on listening to your readers, and giving us what we want, not what you want to write. Thanks.

There is only one small problem. I don't suppose there is any chance of the Archie column totally supplanting the Atari one is there? After all, no one is really interested in them, are they?

Robert Smith, Marlow, Bucks

If I were you I'd get yourself a secret identity and move away from Marlow. These Atari 8-bitters are not to be trifled with.

THE ARCHIE IS TOO EXPENSIVE!

Though not a regular reader of your magazine I've bought a few copies and find it to be rather biased towards the Amiga and ST.

You seem to spend a great deal of time putting Acorn down - the Archimedes being too expensive, Blue Peter giving away A3000s as prizes, Archies are no good as games machines etc.

Maybe the A3000 is too expensive for the average home user. I'd certainly like one but can't afford it (mind you, at the moment I can't afford an ST!), but why on earth shouldn't the Beeb give away superb computers? I just wish I was young enough to enter (and get to meet Caron Keating). Had they given away an inferior foreign machine would you have been happier? I think yes, despite the fact that the lucky winners could well be using Archies at school shortly.

I have no complaints about Jerry Glenwright's review but Rik Haynes' ridiculous comments about A3000s as games machines needs explaining. The Amiga costs more than a Speccy - so what? The cost of the machine in this instance is irrelevant. You can't say, "It's got fantastic graphics and sound, a super fast processor, plenty of memory but it costs too much so it's no good at games", or "There are very few programmers so there'll be no software". It's ludicrous. Many Beeb programmers left to write games for the ST, they'd surely be more at home on an Archie. Zarch/Virus was written in half a megabyte, 1 meg is now standard.

David Braben and Orlando are obviously fluent ARM programmers others will follow their lead as the market grows. It may even be possible to write good games in dear old BBC BASIC which can give the Amiga/ST games a run for their money.

You won't be surprised that I've got a 32K BBC, still chugging along at a leisurely pace, fault free since I bought it 7 years ago, with a decent resale value, lots of great games (thanks in particular to Superior Software). Acorn have never let me down despite their lack of British support in their hour of need, all I can say is I hope the A3000 kicks the s*** out of Commodore and Atari, not forgetting Amstrad (fancy wasting all that money on Sinclair Alan - look what you missed out on).

Alex Card, Aldeburgh, Suffolk

I've nothing against the BBC giving Acorn machines away (it's doing it again this week) but they seem to be overly keen on promoting their own machines. Anyone who saw the BBC 'Software Show' would have thought the only computers in the world were the BBC and Archie.

Rik's comments on the Archie's unsuitability for games were, I think, quite justified. I doubt very much that it will supplant the Amiga or ST as games machines because I doubt there will be much software written for it. I hope time proves me wrong.

THE ARCHIE IS FAR TOO CHEAP!

We Archimedes users have failed in our conquest to try and get you to conform. We have tried to negotiate with you peacefully, but now I think it is our last chance to get it through your thick skulls. The Archimedes is not overpriced! Joel Grounds (Express 30) wrote a letter to you trying to explain that the Arch is better than the Amiga. All you can say is, "Nice machine, but I still think it is overpriced." Is that all you can say? Is that all you can say for your side of the argument? If that is so, then you are more incompetent than I first thought. I hope you recognise that the Arch is not overpriced and is better than the Amiga, for your sake. And tell the other Amiga freaks that too.

Daniel Brown, Cambridgeshire (where the Arch was designed).

can't sit outside pubs in Bath any more when the weather's nice).

OLD HACK

I was very disappointed to see (Express 27) that some dickhead agrees with Tory MP Emma Nicholson's plan to make hacking a criminal offence, punishable by ten years inside, and he is still not satisfied with that amount of time.

I am a hacker and a cracker and a myself I find it very challenging. I wonder whether these people who are against hacking tried hacking. If they had, I reckon they wouldn't disagree with me and many other people.

WC Flush

SCOT FREE

Believe it or not, I live in Scotland. Come on, you know - that place above England. And whilst we are munching away on our Haggis, wearing our kilts, and playing our

You are fond of using unimaginative insults to back up weaknesses in your argument. Have you ever thought of being a politician?

THE ARCHIE IS REASONABLY PRICED!

I am writing in to defend the Acorn Archimedes since everyone seems to be on the attack when it's mentioned.

Every magazine like ACE, PCW, Computer Guardian, and even you seem to love the speed side, but badly criticise the price which is totally unfair, as Acorn have priced it as low as possible. You always have to pay more for the best, this is even true with software. How would Atari or CBM price a 32-bit machine? Has anyone considered this? They have a hold on the games market, so they can dictate the price as they desire.

My only wish is that reviewers would stop knocking its price and comparing it to 16-bit systems. I know the ST and Amiga are the closest neighbours but I think the differences in class and power must always be stressed. Think about PCs. They are 16-bit systems (like the Amstrad PC2286) yet they cost more than the A410 but seem to offer less than the 400 series.

Keep up the good work Express and more on the Arch please!

R Simon, Ealing, London

OK, good points. In fairness to Acorn it must be said that the Archie is possibly the only micro that has been developed, designed and even had its software designed by the same concern, so it has had to recoup a lot of development costs. However, still a lot of people in the know mutter that Acorn is used to educational pricing, not person-in-the-street pricing, and that it could feasibly be (say) £100 cheaper.

How Atari or Commodore would price a 32-bit machine is anyone's guess. I rather think they would have priced an Atari A3000 or Amiga A3000 at under £500 - but then they are world based and can indulge in such ambitious strategies. Acorn on the other hand is more parochial - almost entirely within the UK and its dwindling Empire. It evidently don't feel at the moment that it can legitimately go for an aggressively low price given its restricted market. In the end what it is being criticised for is a lack of ambition.

pipes up in the Highland hills, it might be of interest for all programmers to know that we do have computers up here, our population is over 5 million and that football is our national sport. Shock Horror!

So why, why, why do all these talented programmers only have English teams in their games? We don't want to be Arsenal, not even Tranmere. We want to be Hearts, Rangers, Celtic and even Queen of the South. But no. To be a Scottish team in *Football Manager 2* we have to dish out an extra £13 for an expansion pack.

Wise up. We are not a minority any more. Football interest has risen by 79%

since *Football Manager* came out. (The last one to contain an in team editor inclusive of price.)

Kenneth Jackson, Edinburgh, Scotland

● *A fair point. Come on, everyone, remember that there are other footy teams out there. Scottish teams are, after all, our only real hope for success in Europe for the moment.*

Perhaps a special Scottish version of Football Manager could come out in which the keepers are called Dracula (hates crosses) Cinderella (always late for the ball) or St Peter (spends his life fishing things out of the net).



• Kevin McInally, Scottish International, playing for Villa against Norwich. Perhaps he left Scotland because *Football Manager 2* doesn't let you play for Scottish teams without an expansion pack?

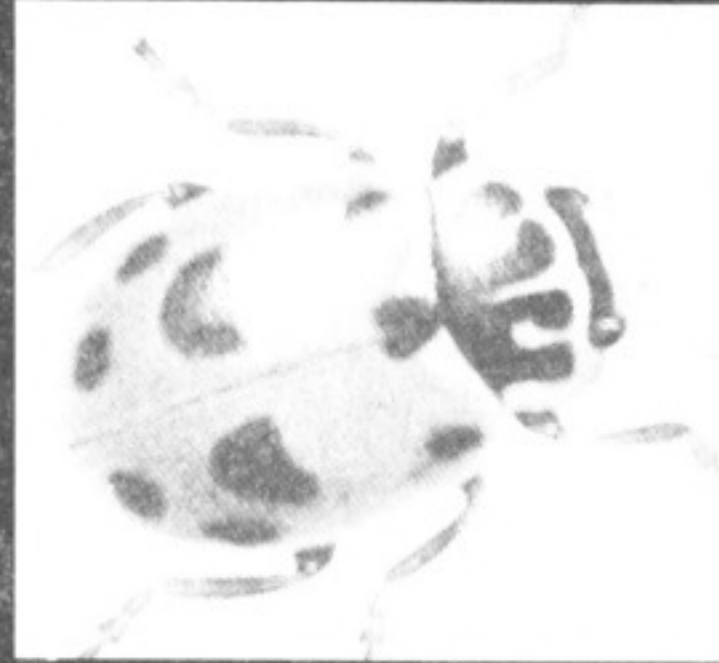
Snippets

DOES THIS MAKE YOU A BUGGIST?

Why are your bugs (Tech Tips) all beetles? As an entomologist, many are old friends but what's wrong with *Scoloposthetus Decoratus* or *Picromerus bidens*?

Alex Card, Aldeburgh, Suffolk

● *If I get 15 requests for a Scoloposthetus or Picromerus column in the next two weeks, I'll give them a column. After all, we've got one for the Atari 8-bit...*



• Why are all bugs beetles, asks Alex Card? Our Endopterygota correspondent replies: There are over 370,000 species of beetle, found in every terrestrial ecosystem. They provide illustrations and test cases for almost every evolutionary principle (Crowson, 1981) and have a distinct pupal stage in which (that's enough about beetles -Ed.)

WHAT A BINDER

I have every issue of the ace magazine you have (no, not ACE - Express!) and I think I would love to buy some binders.

Kenneth Jackson, Edinburgh, Scotland

● *Not many requests so far, I'm afraid, so it looks like there'll be no binders yet.*

POCKET ROCKET

...Uncle Techtip's blanket warning against 'pocket' products might not necessarily apply to *Pocket Protext* (for the PCW at least) which is elsewhere highly recommended...

M J Adams, Ealing, London

● *You're quite right. It's a lovely little word processor.*

AND FINALLY...

Thanks for printing my Archimedes letter (Express 30), but my two questions seem to have disappeared. These were...

Joel Grounds, Llanfairfechan, Gwynedd

● *Sorry, that's all we've got time for this week.*

(Only joking. We've answered your questions in Tech Tips).



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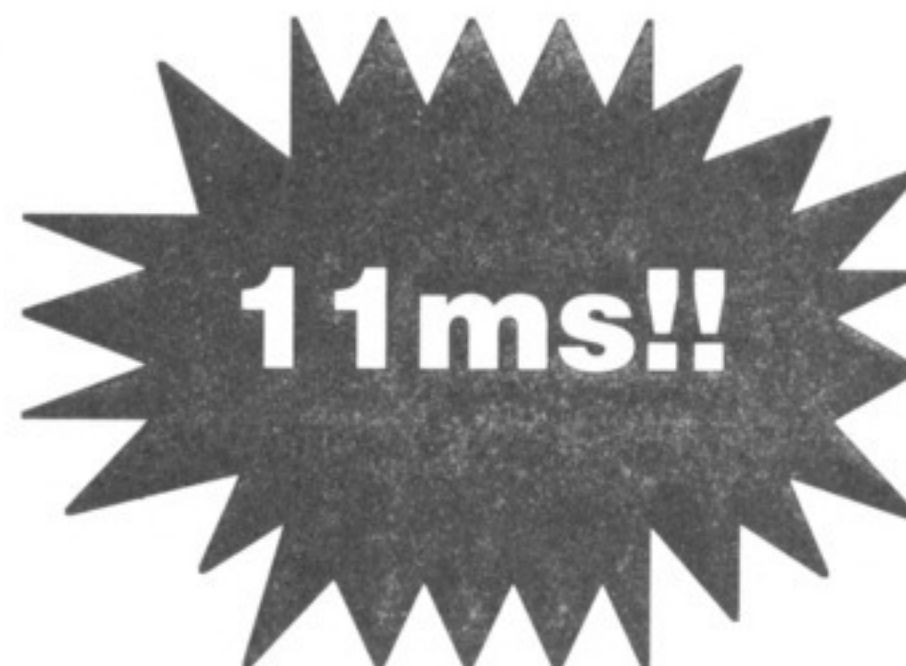
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★ ★ NEW COLCHESTER STORE SOON ★ ★

The stand now training...

The first Computer Training Show (CTS) was held at Olympia between May 31 and June 2. Over 80 exhibitors took space and as many as 3,000 visitors showed up. Steve Jarret was one of them...

CTS was opened by Patrick Nicholls MP, Parliamentary Under Secretary of State for the Department of Employment, and most of the major training companies exhibited, including Applied Learning, Ashton-Tate, BOC Training Services, Datasolve, Kalamazoo, IMSL, and Unysis.

Launched and staged in just over ten months, CTS covered all aspects of computer related training. Some organisations demonstrated the computer itself as a training medium, while others offered traditional training packages for users getting to grips with new hardware and software. Organisations that specialise in developing general training courses jostled for space on the exhibition floor with specialist companies involved with mainframes, networking, personnel

and management training.

High-tech teaching aids were in evidence, and visitors were offered plenty of opportunity to check out the latest audio-visual training packages, including interactive video and laserdisk systems.

A conference running in parallel with the show addressed issues that would concern businesses planning to invest in computer training - two main sessions covered the 'why' and 'how' of educating personnel in the ways of new technology. Similarly, a series of buyers' forums were held during the show to inform purchasing personnel on such diverse topics as communications, networks, UNIX and desktop publishing.

The original idea for the show came from Philip Boyle, a senior sales consultant with ICL and part of the show team, who felt that the time was right for the industry to have its own showcase: "Most of the companies represented here have exhibited at the more mainstream shows, such as PC User and Which?, but really needed a more closely targetted audience where they can approach different sectors - people from personnel, finance, the technical side and line management.

"Very few companies realise the importance of training which is vital to success with new technology. Training maximises the investment in hardware and should be seen as such, rather than simply as capital outlay."

These sentiments were borne out by Sally Preston, project manager for the show. "As part of

the Computing Services Industry, training is just one element of the back-up provided for hardware and software. And although the training industry is relatively new, its growth and turnover is larger, proportionally, than the development and production sector. However, the area of training is seen as just one element of an integrated approach which feeds off the development side and vice versa.

"The event will definitely take place again next year - we already have around 20 companies signed up - but the final format has yet to be decided and depends upon feedback from those who took part. It will also change its title to the Computer Training and Services Show, incorporating other training-related services for personnel and hardware design."



• Visitors had the opportunity to try out the latest training aids and hardware, such as this touch-screen monitor

Interested parties requiring more information can contact Sally Preston at Montbuild on: 01 486 1951

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ACID AUDIO

ART



Heard the latest Prince single? Love or hate it you can't ignore the massive mix of soundtrack samples from the forthcoming Batman movie. Want to get in on the action? It's easy. Andy S-S-Storer slips on the cans and hits the decks.

Compared to the images your ST or Amiga's graphics chips can display and manipulate, the noises the sound chips churn out don't come anywhere near. To bridge the gap many games and demo writers use a sampler – a device that takes any real-life noise and then lets your micro reproduce it – enabling you to master soundtracks and effects on tape before importing to disc with no apparent loss of quality. So how's it done?

A sound sampler comprises a plug-in cartridge containing an analogue-to-digital converter which translates sound waves, recorded via a mini-jack or phono audio input, into numbers. Accompanying software enables you to perform a variety of numeric operations on the sampled sound and thereby create a range of effects. The quality of digitally recorded sound is determined by the number of readings per second, or sampling rate, used to measure the definition of the waveform. Most packages allow you to sample sounds at a rate of up to 30,000 times a second. Of course, the quality of the analogue signal you're sourcing is crucial too – as is the level at which you're recording it. Once you've hooked your machine to the hi-fi or a microphone, you need to carefully monitor the level of the incoming signal, maximising clarity whilst minimising distortion. A variety of visual displays of audio are available for this purpose – from oscilloscopic waveform monitors and 'VU' metering to 3D spectrum analysers. Once on-board you can rest assured the sampled sound is safe in RAM and available for all kinds of trickery. A package offering more acid audio art than any to date is Master Sound.

MASTER SOUND

● **ST £34.95** ● **Software Horizons**
● **01-446-9146**

Master Sound comprises a small cartridge, fitted with a standard 3.5mm mini-jack input to take a source such as a hi-fi, Walkman or microphone. Once loaded, the software utilises the full available RAM of the computer – leaving you 300K on a 520, 820k on a 1040. You choose between sampling rates of 5, 7.5, 10, 15 and 20 kHz and click on the digital oscilloscope or LED-style VU meter to set the input level for optimum sampling level. By positioning sliding bars as 'in' and 'out' points of an edit, you can choose where you want the recorded signal to reside in displayed memory. The data appears as a waveform which may be easily magnified for precision editing –

S-S-ST samplers

Digisound ● £89.99

● **Siren Software ●**
● **061 228 1831**

A rather hefty piece of hardware plugs into the ROM socket to accompany GEM style menu-driven software with icon 'buttons' at the bottom of screen for the more common functions. Sample rates go right up to 40kHz and there's a neat status display to inform you of such essentials as remaining available memory, sample length and echo time. The massive range of effects, which can be added even while sampling is taking place, include instant pitch changes at the touch of any and all of ST's keys.

★ ★ ★ ★

Replay ● £79.95

● **Microdeal**
● **0726 68020**

Replay's plug-in cartridge is

preferable to any of the others since it allows both phono input and output – so you're able to replay all your work back through your hi-fi. The software's neat too – maximum sample rate is an impressive 61kHz and it allows up to ten samples to be assigned keys for instant recall. Aside from the usual range of features, it's also MIDI compatible.

★ ★ ★ ★

Pro Sound Designer

● **£49.95**
● **Power Computing**
● **0234 273000**

One of the first ST samplers and perhaps a little dated in terms of features. Coming in both monochrome and colour versions which feature sound chip editor and sample compressor respectively, the rate tops out at 30kHz. But Pro Sound is a part of the same suite as Pro Midi,

allowing Pro Sound samples to be used as instrument voices on a synth, and Pro Light – a sort of Trip-a-Tron style synchronised colour cycler for fancy screen displays.

★ ★ ★

STOS Maestro Plus

● **£69.95**
● **Mandarin Software**
● **0625 878888**

Part of the STOS suite of creativity tools including The Games Creator and Compiler, features a plug-in card and all the software needed to incorporate sampled sounds into your STOS programs. Along with a selection of pre-recorded sampled sounds and 13 sound related STOS instructions, the package is possibly overpriced although a cut-down version, without the hardware, is available for £24.95.

★ ★ ★



• Master Sound's sampler and sequencer screens

HIGHLIGHTS

- The only sampler with a built-in sequencer
- Wide range of easy to use effects

DRAWBACKS

- Maximum sampling rate only 20MHz
- No MIDI compatibility

parts of the sample can be cut, copied, overlaid, faded, filtered, shrunk and made louder by simply clicking on icons.

Where *Master Sound* really comes into its own though is in its inclusion of a one-track sequencer. Entering this mode lets you assign up to 18 samples to the keys on the numeric pad. The idea is to load successive samples into memory, allocate keys to them, and then record a master sequence by tapping the keys in realtime. Repeated tapping of the same key will result in 'n-n-n-nineteen' style stuttering. You can change the pitch of sampled sounds by plus or minus half an octave. In this way, quite complicated sequences of 1,000 seconds in length can be recorded. These can be replayed, fast forwarded, rewound and edited at will – even overdubbed. The results can then be saved to disk.

The one drawback is that the sequencer will only handle sounds sampled at 10MHz – which isn't too clear. It's not a good enough rate, for instance, to be used in disco or live performance applications, which is a shame. However, sounds can be recorded at 20MHz and then squeezed for sequencing at 10MHz overcoming half of the problem, but then the output quality is still limited. However if you're interested in using samples in your own programs then the quality easily suffices. And in this department, *Master Sound* positively excels – samples can be added to your own graphics and text with short BASIC routines. Atari, GFA, Power and HiSoft BASICs are supported and compatibility with *Degas* files ensures you can put some imaginative audio-visual mixes together. All for an incredible £35.

★★★★★

Sampled seconds

The ST and Amiga's bigger memories, speed and popularity make them the main machines for sampling packages – but the PCs and 8-bits do get a look in.

- C64 – Try Trilogic on 0274 691115 and Datel on 0782 744707
- CPC – Give RAM Electronics a call on 0252 850085
- Spectrum – Cheetah is worth a call on 0222 555525
- PC compatibles – Scarce, but try Mercantile and General Facilities on 01 876 1670

Sampler SFX

Most packages will allow you to slow down, speed up, reverse, cut, copy, merge, add echo, reverb and filter sampled sounds. Also standard is the loop function, which allows you to splice a sound into an

endlessly repeatable sequence. Some packages also allow you to squeeze, stretch, fade-in and out, and through MIDI drivers play samples through a synthesiser. If you're serious about incorporating samples

into games or demos then there's also packages available that offer source listings for incorporation into C, assembler and Basic routines along with paint package compatibility for slide show applications.

MEGA AMIGA SOUNDS

Rik Haynes jacks into Amiga samplers to sound out the best one around

The Amiga may not have the built-in MIDI of the ST, but it does have far superior sound abilities to its 16-bit arch rival. The audio-visual custom chips on the Amiga enable it to create four channel stereo audio, making it a top player in the micro sound stakes.

The biggest users of sampled audio on the Amiga are games programmers and demo creators. Probably 99% of all Amiga games incorporate sampled sound FX for effects such as laser fire and explosions, and are usually backed up with a soundtrack which is either snatches of music from a real-life song, or an original composition created by a computer musician using a home-grown sequencer – like the infamous *Sound Tracker* – with sampled instruments for synthesiser, drum sounds, etc. The Amiga has an impressive array of sound sampling hardware and software available for it, with many products imported from the States. One of the best things about this Amiga sampling hardware and software is that for the most part, each is interchangeable with the other, giving you the best of both worlds. There's also a lot of Public Domain sampling software around, so if you don't like the software supplied with your hardware it won't be too difficult (or expensive) to swap it for something better.

hardware and software • £79.95

• **Applied Visions on 0923 818078**

Our favourite Amiga sound sampler, this high-spec deck is a stereo affair with two phono inputs and a separate microphone input. The software isn't the best around, but the hardware is first-rate, constantly producing the crispest samples we've heard.

★★★★★

AMIGA PRO SAMPLER

• **Sampling hardware and software**

• **£69.99**

• **Datel Electronics on 0782 744707**

Pro's hardware offers a good range of inputs and comes with a cheapo microphone. The accompanying *Studio* and *Jammer* software look nice, but lack the finer features needed to make them truly usable.

★★★★★

PRO SOUND DESIGNER (v2) GOLD

• **Sampling hardware and software**

• **£79.95**

• **Power Computing on 0234 273000**

A standard assortment of sampling software and

hardware which also includes *Pro MIDI Plus*, allowing you to play MIDI samples via a MIDI interface (£24.95). Also available is the *MM5000* add-on musical keyboard (£99.95) and the right hardware and software to connect the C64 *Music Expansion System* keyboard to the Amiga.

★★★★★

AMAS • Sampling hardware and software and MIDI interface • £99.95?

• **Microdeal**

• **0726 68020**

A jack of all trades, and unluckily master of none due to the price, *AMAS* fits uncomfortably between a sampling device and a MIDI interface. If you want only one of these functions, forget it. If both are required, take a look at *AMAS* first, and shop around before you make a choice.

★★★

AMIGA AUDIO DIGITISER • Sampling hardware • £27.99 (mono), £37.99

(stereo) • Trilogic • 0274 691115

Cheap and unfortunately nasty, *Amiga Audio Digitiser* comes without any software to keep costs down. When we tried using the stereo version, we kept getting terrible background noise, and that was without hooking it up to a sound source!

★

FUTURE SOUND

• **Sampling**



DISK DOSSIER

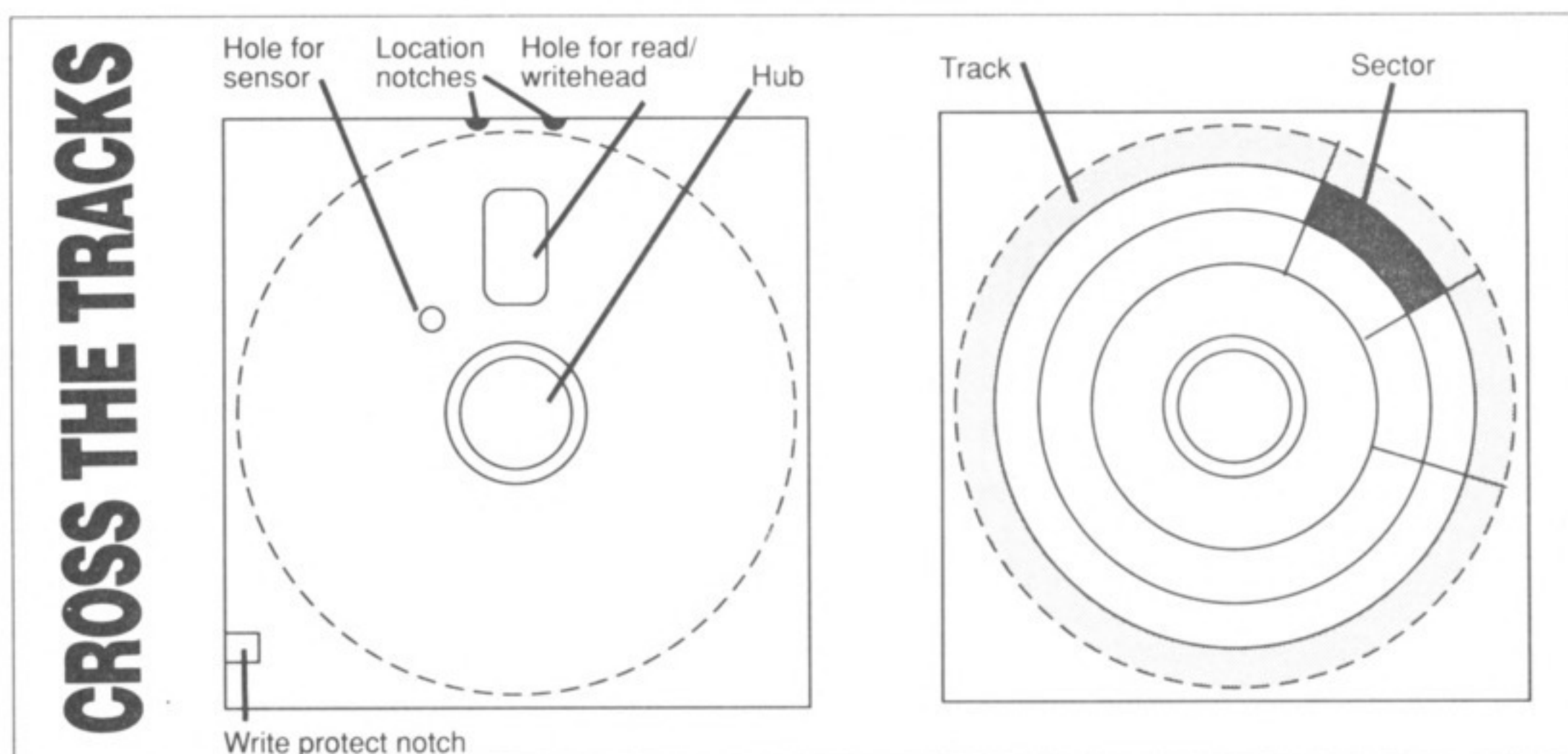
Why do disks fall over? Is an expensive disk better than a cheap one? How do they work? Can you protect your disks against corruption? Jerry Glenwright gets together everything you wanted to know about disks...

Nowadays, you can go to any computer store and buy a 5.25 inch floppy disk for less than the average price of your daily newspaper. The drive itself costs about half the national average weekly salary.

Nothing remarkable about that, you might think, but just a few years ago, if you were the proud owner of a disk drive you'd have basked in the reflected light of green-with-envy computer users unable to afford the several pounds for every blank disk, let alone the hundreds necessary to acquire the drive. Hardly any software was available on disk format because hardly anyone had a drive. Even if you had the moolah, there usually wasn't a drive available for your 8-bit system (with the exception of American machines such as the Apple, Atari 8-bit and Commodore 64. Americans never did rub along with cassette storage). Computer owners had to resign themselves to the long waits and poor reliability associated with cassette backing storage.

The floppy disk as a backing storage medium was first suggested in the early '70s. Several methods of magnetic storage were in use at the time, ranging from endless tape loops to the core memory - a three dimensional matrix of tiny metal rings joined together by fine wires. By sending electrical charges along the wires, individual rings could be magnetised thereby 'storing' information. Core storage offered the massive capacity of about 16K maximum, was bulky and amazingly expensive.

Clearly, a new method had to be devised to



store valuable data in a convenient and cheap way. Enter the floppy disk. Originally 8 inch disks were made which offered the huge capacity - by the standards of yesteryear - of 64K. The disks, at a cost of several pounds each, were comparatively cheap, they were reliable and the drives themselves were affordable to the business users who made up the bulk of the computing fraternity.

America, as always, adopted the new disks readily, but although popular here, they remained obscure outside the business environment. Besides, how were you going to connect an 8 inch drive to your UK101?

Any advance?

From humble 8 inch beginnings, the technology advanced and found its most popular format in the 5.25 inch design. Adopted by IBM's new baby the PC (although this machine originally had a

cassette port too), it could store 180K of data on a single sided floppy. Later, the flip side was employed taking the capacity to 360K.

By the mid '80s, special, expensive, 5.25 inch floppies could store 720K and power users were looking for improvements in the technology to allow faster access times and greater capacity. Several contenders for the new standard were vying for attention, notably Hitachi's 3 inch drive and the 3.5 inch device favoured by the rest of the computing industry. The 'rest of the industry' won and the 3.5 inch format became the new standard.

The only machines which still use the 3 inch format are Amstrad's CPC and PCW range, and the Sinclair Spectrum +3. Supplies of the disks completely dried up in the last few months due to Amstrad's 'contretemps' with its suppliers, and although this situation is now resolved, disks still are a relatively high price.

The 3.5 inch drive was particularly suited to the new 16-bit large memory machines such as the Atari ST, Commodore Amiga and IBM's PS/2 range. The 3.5 inch drive was fast, had a large storage capacity (typically 720K) and was cheap. The disks, although quite expensive at first, lowered significantly in price once they were being bought in quantity, and today most software is available on 3.5 inch disk. They're smaller and more robust and reliable due to the hard plastic outer casing which surrounds the delicate surface of the disk. Don't dismiss the 5.25 inch format, though - there's a small planet's worth of users out there - literally - ensuring that this technology will continue for many years to come.

Initial impressions

Before using a floppy, you set it up for use by your computer and disk drive and this process is known as formatting.

Magnetic fields

So just what is a floppy disk? What is it made of and how does it store computer data?

The floppy is a disk of flexible plastic (usually 'Mylar') coated with a metal oxide which renders it sensitive to electrical charges - the surface of the disk acts in a similar manner to the electro-magnet.

An arm with a read/write head similar to that used in a cassette recorder brushes over the surface of the disk. When an electrical current is applied to the disk via the head, the

oxidant is magnetised, and it is in this way that the disk is made to store data. Reading the data is a simple matter of detecting the tiny magnetised areas using the same read/write head and interpreting this information in a useful manner.

To enable the surface of the disk to be used in a coherent and efficient manner a special program known as a formatter is used on the disk before the initial writing of data. The formatter divides the disk up into concentric tracks and

each track into sectors. Two or more of the sectors are set aside as the directory areas which tell the computer where the contents of a file are being stored. When data is written to the disk the address of the data is also written to these directory areas.

It's like a local post office which holds the name of every person residing in the village and their address. Strangers to the village could find their friends by going to the post office first and getting the address.

Disk operating systems which allow the computer to use the drive provide special programs to carry out the formatting process. But why is this necessary? What happens during formatting?

Imagine the surface of the disk as an uncharted region of rain forest (remember those?). Obviously anyone venturing into this unknown and unmapped territory would quickly become lost and it usually requires many lost explorers before the rain forest is finally mapped and easily accessible by the ordinary traveller.

The read/write heads of your disk drive would quickly become lost on the surface of the disk if you didn't send in the explorer first in the guise of the formatting program. This program 'marks' the surface of the disk with magnetically recorded lines denoting tracks and sectors. The disk operating system can then make use of the disk and find its way around using these lines in the same way that our travellers would use the lines marked out on the maps.

The formatter can set up disks of the same size to offer different storage capacities by marking the lines in different patterns on the disk. Obviously, the drive your using must be able to handle the different capacities. This depends on the ability of the read/write heads to deposit a suitable magnetic signal on the disk and subsequently retrieve it, and also whether the drive can access both sides of a disk or just one side.

For example, the Atari STFM was originally supplied with a 3.5 inch drive which - although the formatter program can format a disk up to 720K - could only use 360K of information because it could use only one side of the drive. Likewise the later machines, equipped with double sided drives could write to either one side of the disk (360K) or both sides (720K) depending on how the disk was formatted. It's a subtle relationship between the two.

So although formatting programs and the disks

themselves may be capable of higher capacities, your drive must also be able to access this extra storage space.

Never mind the quality

Disk quality is a closed subject to many computer and disk drive users. What's the difference between 48TPI and 96TPI? What is TPI for that matter? Are some disks made of inferior products and consequently of poorer quality?

Well although it is indeed true that some manufacturers have, over the years, employed cheap materials and poor coatings of the necessary oxides, which make for bad reliability and a short life, most disks are made of good quality materials and are only designated as being of high or low density (and therefore high or low quality) after the manufacturing process when the disks are tested.

Testing involves writing magnetic information to the disk over and over again, a search for bad sectors (unusable areas of the disk) etc.

The term TPI or Tracks Per Inch is used to denote a disk which has passed all tests and is a high density disk capable of storing information at a density of 96TPI. If the disk fails some of the tests it is designated low density 48TPI. You can use the 48TPI disk to store a larger amount of data than is recommended, but the manufacturer has said that they can only guarantee the disk for a certain amount of data, anything greater and it may be unreliable.

Today almost all computer users have a disk drive - if not, then at least there will probably be one available when they save the required amount - and the use of cassette tape is in sharp decline. No more the half hour wait associated with every program load. ●

Protect and survive

Ten ways to preserve the data on your disks. Of course, it's taken as read that you'll be making frequent backups of everything!

- Never bend your disks
- Don't place the disk in direct sunlight or on any hot surface
- Don't keep drinks next to your disks - sooner or later you'll upset a cup and ruin a disk
- Don't leave your disks in places likely to receive high

doses of radiation, such as on top of a television set or monitor

- Don't put them near or under a telephone - they can corrupt disks too!
- Do keep your disks in their protective jackets or boxes to avoid dust and other objects penetrating the sleeve
- Do store your disks in a purpose-made disk box
- Do wait until the drive light is extinguished before removing a

disk from a drive.

- If you send a disk in the post, use a cardboard-backed stiff envelope and wrap the disk in cardboard or tin foil. X-ray machines at airports probably won't harm your data, but don't risk it - request a hand search
- Beware of notching single-sided disks to enable you to use the flip side. Although this won't harm your drive, data integrity can't be guaranteed



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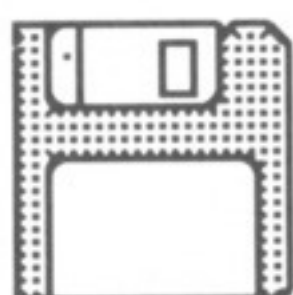
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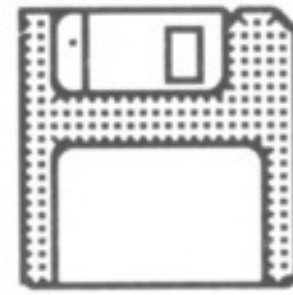
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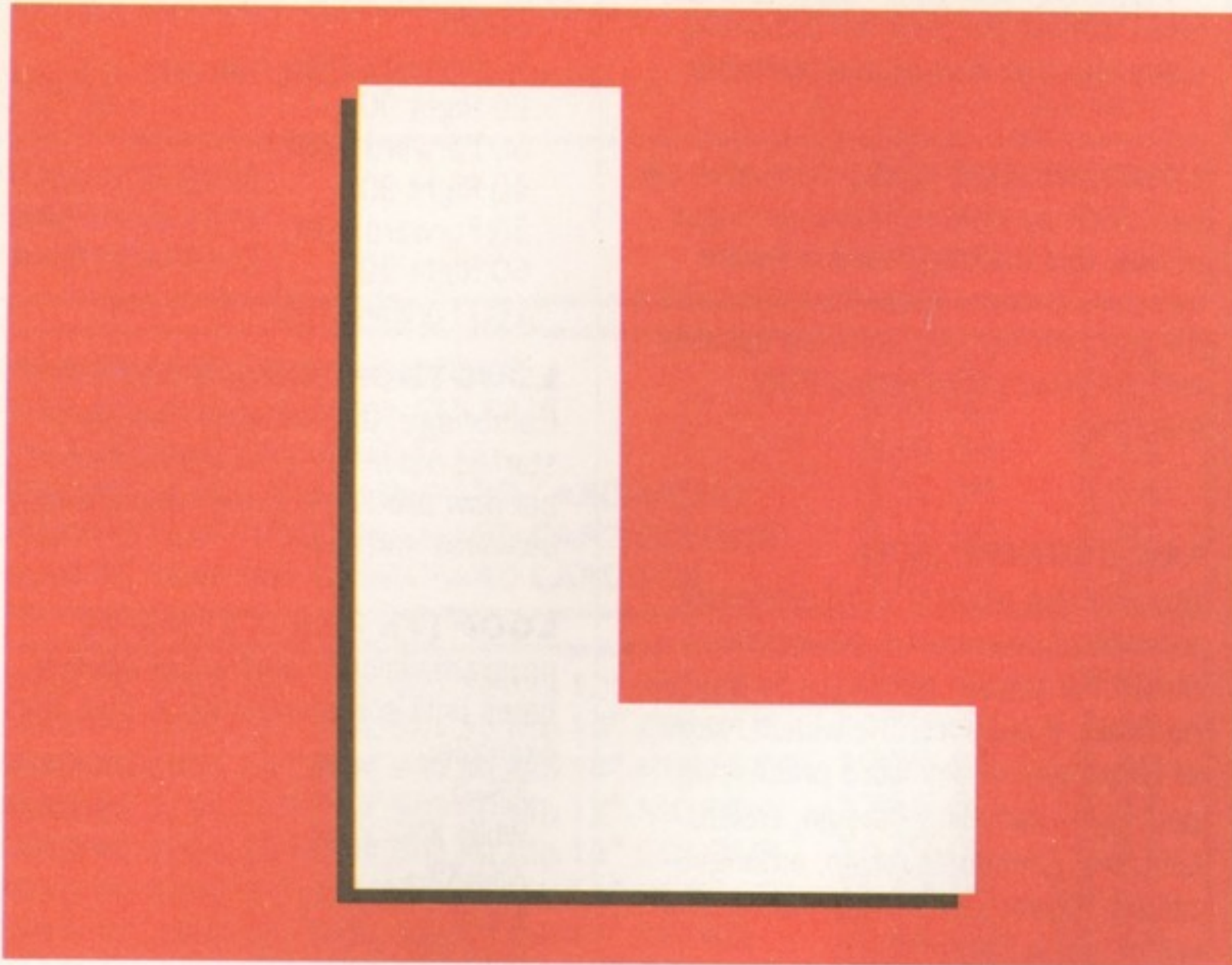
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LABEL (T): A name used in a computer program to represent some abstract alpha-numeric value. By using labels, programs are easier to read and understand at a later date.

Nowadays, the would-be programmer has a large choice of languages in which to program ranging from BASIC and Pascal to C, Fortran, LISP, LOGO and Cobol.



• A number of manufacturers offer hardware/software packages which let you connect two or more PCs to form LANs (Local Area Networks)

LAN (T): Local Area Network. Using cables and special add-on cards, it is possible to link several IBM-PCs or compatibles together. Once linked, users of these machines can access printers, disk drives or any other hardware attached to the network or software held on the system. One of the machines on the network is designated the file-server and it is this machine that monitors and facilitates the activities of the other computers on the network.

The network allows small businesses, schools and colleges with limited funds to share one item between many terminals (as the computers on the network are known) efficiently and effectively.

LANGUAGE (L): A collection of related commands that allow a computer user to instruct a computer to perform useful tasks. Many such languages exist, but the most common of these is the BASIC language supplied with almost every home computer. Languages take the hard work out of instructing a computer by allowing users to write their instructions in a series of commands which are similar to those of their native tongue. In the early days of computing, the machines had to be instructed using the binary number system. Programming was a laborious process and often led to errors in the programs, which were extremely difficult to find and solve.

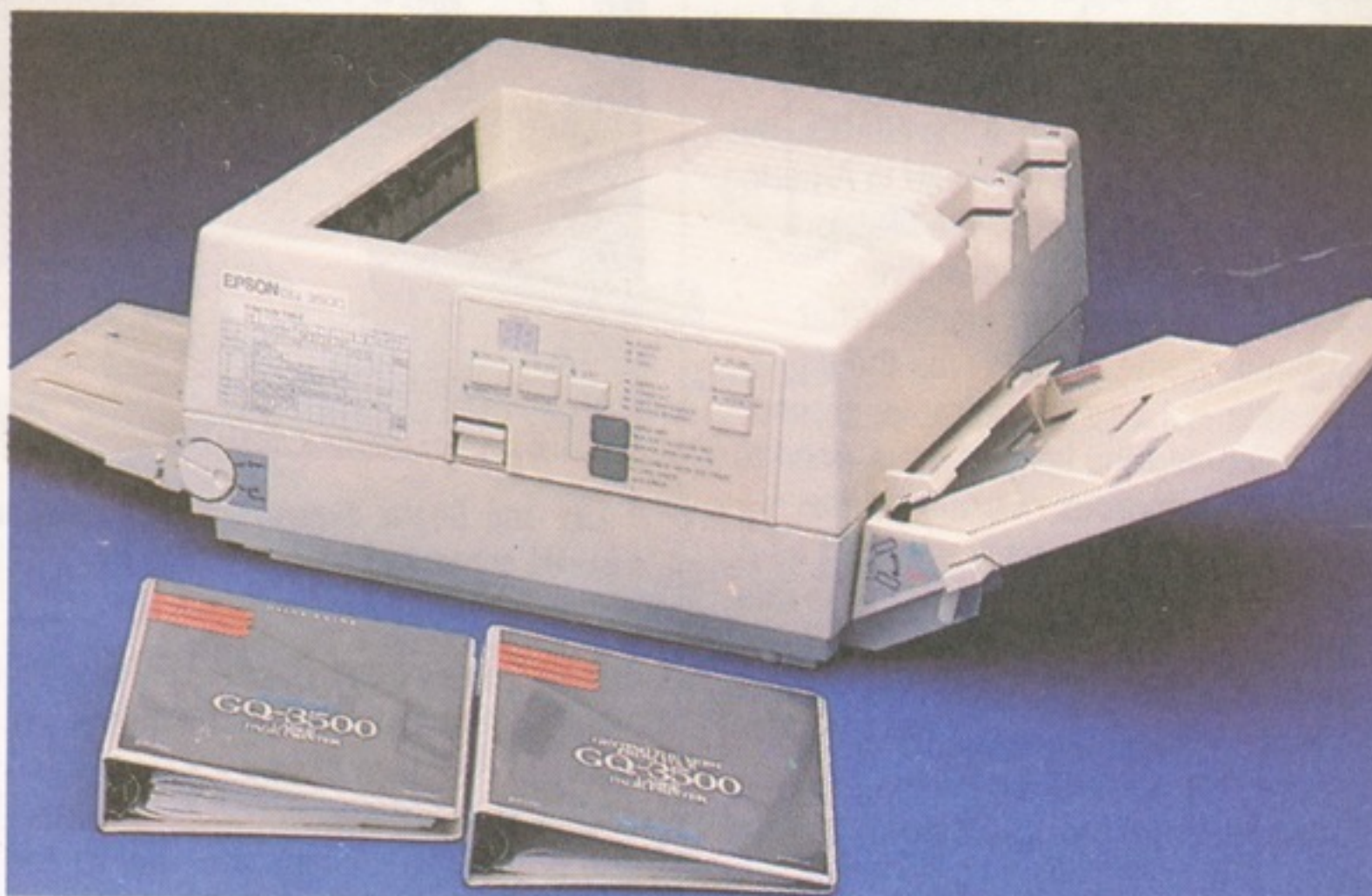
LAP-TOP (C): The generic term for a computer which is fully-featured, yet remains small enough to be carried around on trains, buses etc., and used on a table top or indeed in the lap. Many manufacturers have recognised a possible area of exploitation in the field of lap-tops for the busy, on-the-move executive and have consequently designed and marketed a lap-top of their own. Notable manufacturers are Panasonic, Epson, Tandy, Walters and Compaq.



• Laptops are PC-compatible machines that offer all the features of full-sized machines but fold into compact cases for portability and will run on batteries for use on the move

LASER PRINTER (T): High technology printing in the form of a laser which 'prints' an image on a rotating drum. This drum picks up a dry toning powder on the non-lasered parts which is then transferred to paper by impression. The process is quick, clean and of a very high quality. The laser printer is commonly employed in desk top publishing where it reproduces electronic documents at high resolution – typically 300 dots per inch (dpi).

Laser printers have one drawback in that they are expensive (£1,500 or so) when compared with other printers although the quality is far superior.



• Laser printers offer the best quality of all printer types, but are bulkier and far more expensive (typically £1,500 or more)



• Last Ninja II: Sequel to an arcade adventure renowned for graphic quality

LAST NINJA (G): Martial arts arcade adventure featuring stunning backdrops and sprites, which made the C64 look like the Amiga (!).

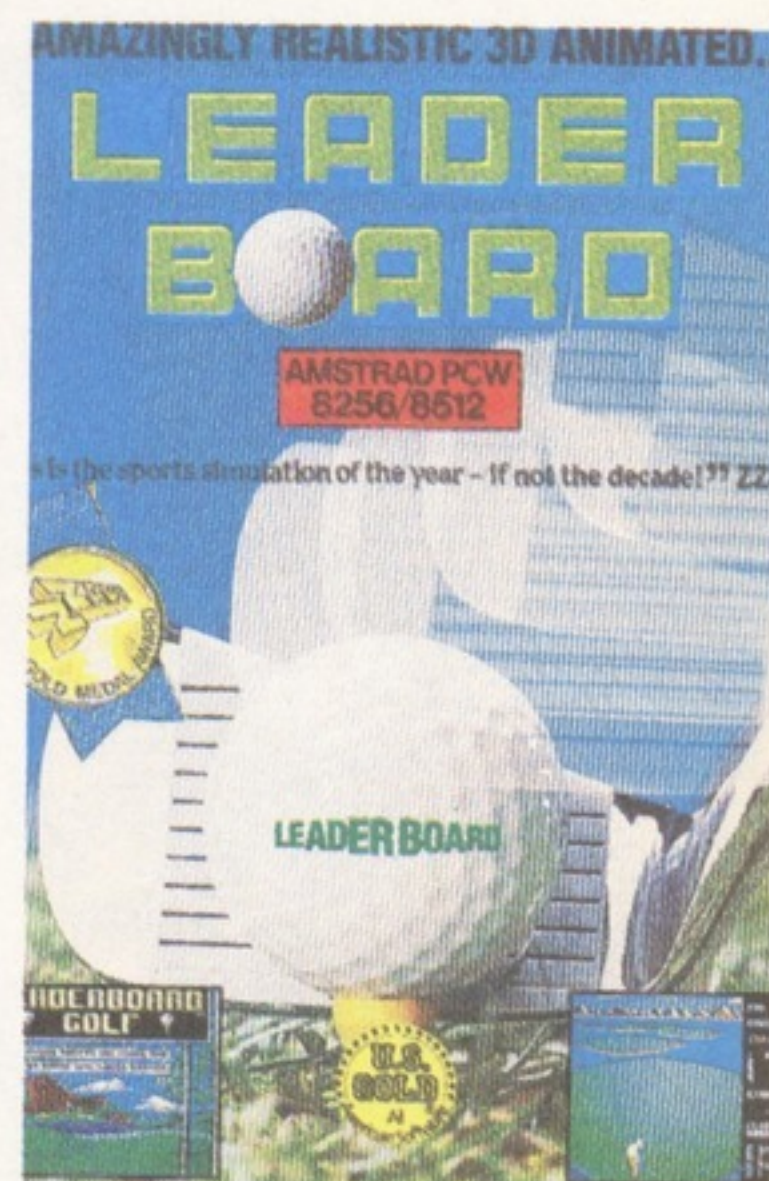
LATENCY (T): The period of time taken by a hard drive read/write head to reach the particular track and block where pertinent information is held. Latency is an important concept when measuring the speed of hard drives. See also **hard disk**.

LCD (T): The LCD or Liquid Crystal Display is used in many laptop and hand-held computers to provide a display medium which has a low power consumption yet offers a clear and readable output. The liquid crystal display has at its heart a series of randomly placed crystals which, when

an electrical current is applied to them, 'line up' in neat rows and become visible. The LCD uses very little power, unlike its cousin the LED, and is therefore ideally suited to portable computers where weight is of the essence. See also **LED**.

LEADERBOARD (G): Definitive golf simulation from US Gold. Converted to most formats, the game has become a best-seller due to its mixture of well-drawn graphics and realistic play.

LED (T): Light Emitting Diode. By applying electrical power to a light emitting diode, the device generates energy which manifests itself in visible light. The LED was used in early



• Leaderboard has become the classic golf simulation

digital circuits such as watches and calculators, but was quickly replaced by the LCD, due to high power consumption. In an attempt to cut down on power consumption the LED was 'pulsed' i.e. the device was made to flash on and off rather like a lighthouse. This action was performed faster than the eye could detect so the LED appeared to be 'on' and power requirements were lowered. Fortunately, even with this development, the LED slipped into obscurity.

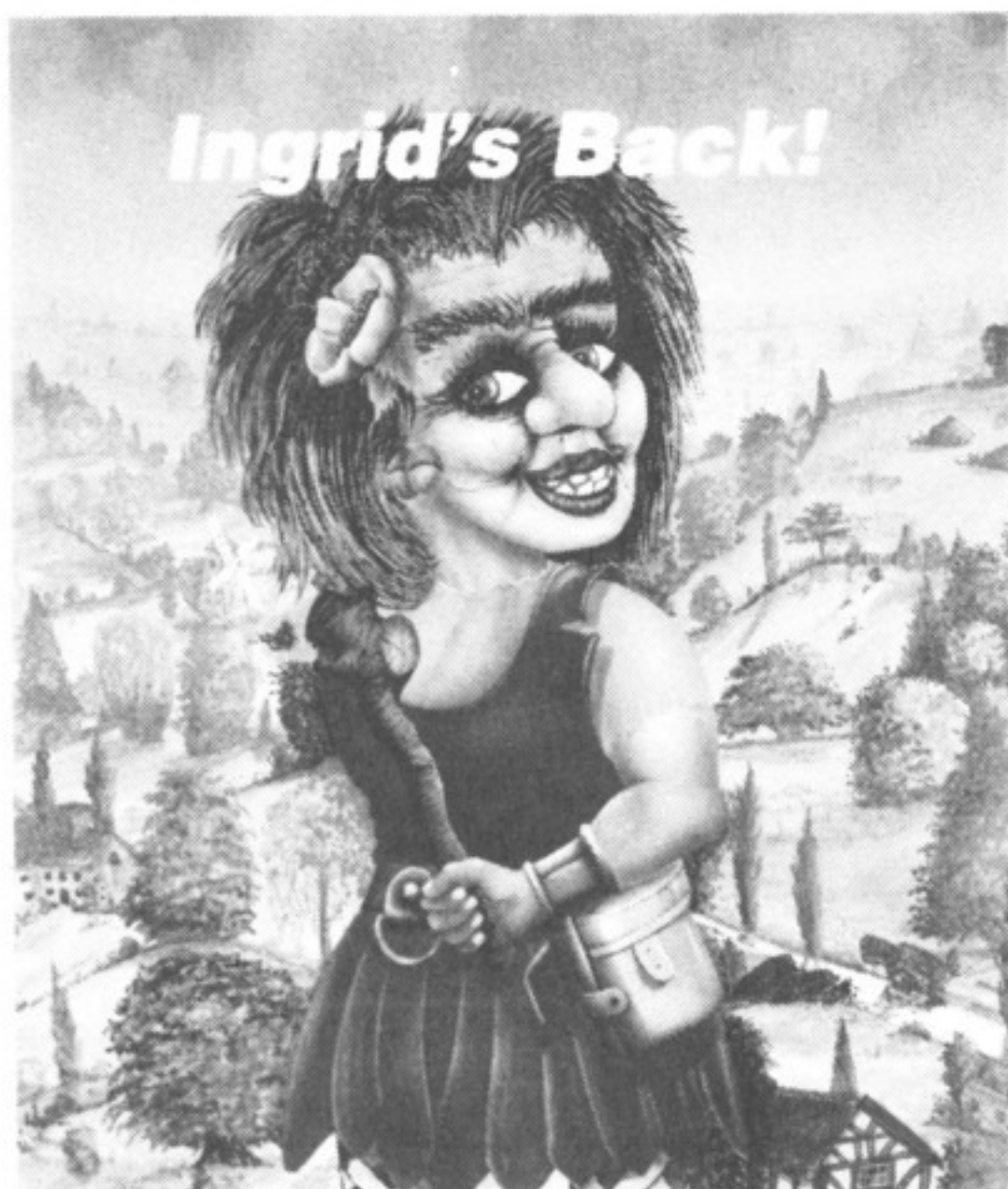
LEISURE SUIT LARRY IN THE LAND OF THE LOUNGE

LIZARDS (G): Developed by Ken and Roberta Williams of Sierra On-Line software house based in the States, this was voted 'Game of the Year' in America in 1988 and was one of the first in a long line of colourful interactive adventure games from Sierra. What made this game notable was the little character - Larry - you move around on screen and the level of smut used to provide a humorous overture to the game. Larry was actually released as a text-only adventure way back in the mid '80's but it wasn't until graphics were added that the game really found a wide audience. Unfortunately, in its sequel *Leisure Suit Larry Goes Looking for Love*, the smut was toned down and the game is consequently lacking in fun play. Other note-worthy titles from the company are *Police Quest* and *Silpheed*.

LETTER QUALITY PRINTER

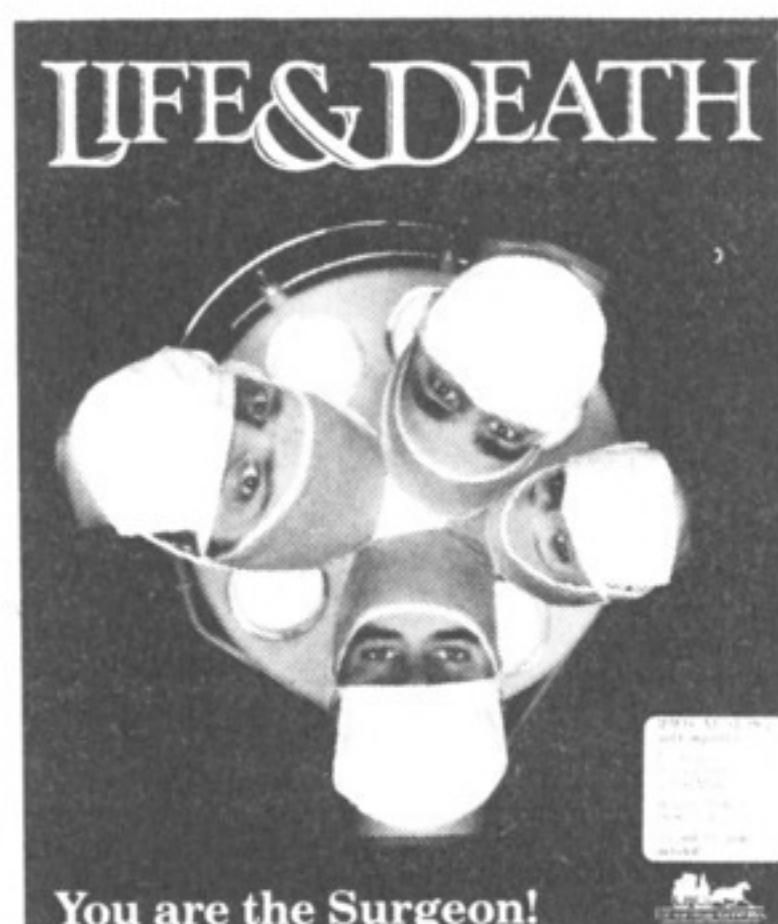
(T): Used to describe printers which can offer a quality of text reproduction similar to that of a typewriter. The daisy-wheel, laser and ink-jet printers all produce high quality text. Unfortunately, several printer manufacturers offer dot matrix machines with an option to write NLQ or Near Letter Quality text which is rarely up to the standard claimed. See also **daisywheel**, **dot matrix**, **ink jet**, **laser**.

LEVEL 9 (CO.): Responsible for a small planet's worth of adventure games for micros ranging from Oric-1 to Beeb, the company is firmly established as a leader of the genre. Notable games are the *Ingrid Gnome* series and *Night Orc*.



• *Ingrid's Back*: Latest release from software house Level 9

LIFE 'N' DEATH (G): Strange surgical simulation from American company Software Toolworks. The player adopts the role of a new surgeon whose job it is to operate on every available patient. A slip of the knife produces blood-curdling screams from your unfortunate victims!



• *Life and Death*: bizarre surgery simulator from US company Software Toolworks

LINE PRINTER (T): A printer which can print a whole line of text at one go. Many of the large printers attached to mainframe and mini computers were line printers, but nowadays, due to an increase in the speed of dot matrix machines, the line printer is almost entirely extinct.

LINKER (L): After a source code program file has been offered up to a compiler, two distinct processes are performed before the program is ready to run. The first of these processes known as the compilation stage, wherein the source code instructions are 'changed' into commands directly understandable by the computer. During this stage, symbol tables are created containing variable labels which have the values assigned at a later stage. Next comes the linking of the program in which each module of code is linked together into a contiguous whole which can be run directly.

LISP (L): A high level language used to code artificial intelligence problems.

LISP stands for LIST Processing and was originally devised to process lists of data (not surprising, given its name). See also **prolog**.

LLAMASOFT (CO.):

Software house responsible for games involving sheep, llamas and various other cloven-hoofed quadrupeds. See also **Minter Jeff**.

LOCAL VARIABLE

(T): Certain programming languages allow the definition of variables whose values are restricted to the programming module in which they are defined. This means that programmers can use the same variable name many

times without the program becoming confused. See also **global variable**.

LOCOMOTIVE (CO.) Formed in the early '80s by Howard Fisher amongst others, this Dorking-based software company is responsible for *Locoscript* - the word processing software bundled with Amstrad's best-selling PCW machines.

LOCOSCRIPT (WP):

Arguably the slowest word processor available, *Locoscript* is nevertheless one of the easiest packages for the beginner. It supports the widest range of languages of any word processing package - including Persian, Welsh, Urdu and Czechoslovakian, amongst others. Express reckons a PC version will be out in September.

To Box
10 Forward 100
20 Right 90
30 Forward 100
40 Right 90
50 Forward 100
60 Right 90
100 Forward 100

LOGOTRON (CO.): Based in Cambridge, this software company started out in the educational market but now produces games and low-cost business software.

LOOP (T): Piece of a computer program which is performed several times until some condition is met. For example:

```
X%=1
While X%<100
X%=X%+1
Wend
Print X%
```

The While Wend loop will be performed and X% incremented by one until X% becomes 99, at which point the condition is met, the loop ends and the value of X% is printed.

LORDS OF MIDNIGHT (G):

Strategy, role-playing game by Mike Singleton featuring cute sprites, which is held in high regard by Spectrum users.

LOTUS 1-2-3 (INT):

Integrated software package which includes modules for spreadsheet, database and business graphics which is so popular it's spawned several clones, notably *VIP Professional*, which offers the same specifications at a significantly reduced price.

LOW-LEVEL LANGUAGE (L):

Before the advent of computer programming languages such as Pascal, Cobol and C, programmers had to use assembly language commands which were directly related to binary instructions and consequently difficult to learn and to employ. Assembly language is however significantly easier than using binary.

LOW-RES (T): Graphics capabilities offering a LOW-REsolution of pixels per screen. Early home micros such as the ZX81 offered screen resolutions of 64 x 64 pixels. Contrast that with popular machines of today such as the Atari ST which offers a screen resolution of 640 x 400 pixels.

LSI (T): Large Scale Integration is the term used to describe the cramming of even more components such as transistors, resistors etc., onto a chip of silicon. Contrast with **SSI**.

LocoScript 2
Word Processor for the Amstrad PCW



LOCOMOTIVE SOFTWARE **User Guide**

• *Locoscript 2*: Latest version of Locomotive's hugely successful PCW wordprocessor software

LODERUNNER (G): Early platform game for the Commodore 64 and Atari 8-bit machines. It remains one of the few computer games to be converted to coin-op format.

LOG ON (T): The initial procedure when attempting to gain access to a mini, mainframe or network of computers. During the logon procedure the user will either be prompted for a name or user number and then asked for a secret password. The password is to exclude non-registered users from the system in case they wish to wreak havoc. See also **mini**, **mainframe**, **network**.

LOGO (T): Programming language originally designed for use in schools where its English-like graphics commands encouraged programming. Here is a snippet of Logo which draws a box.

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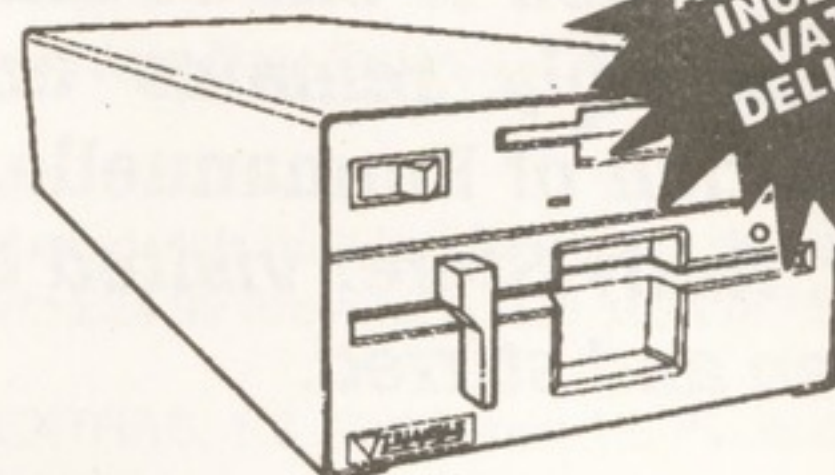
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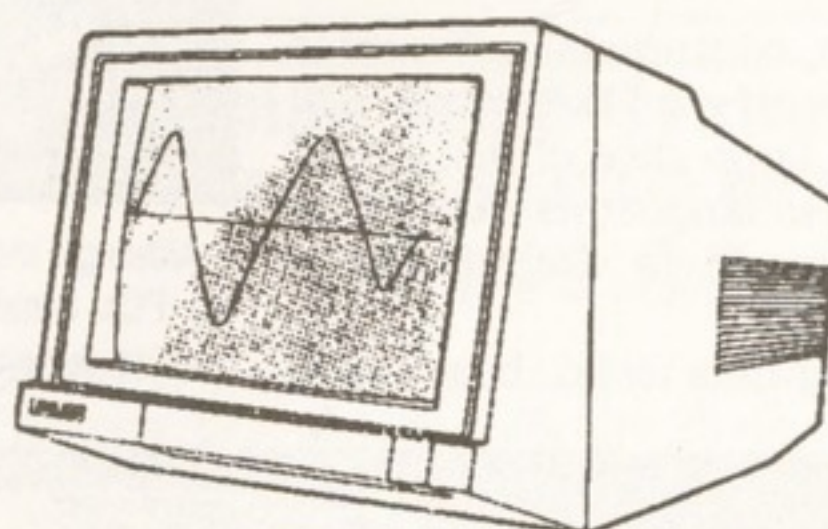
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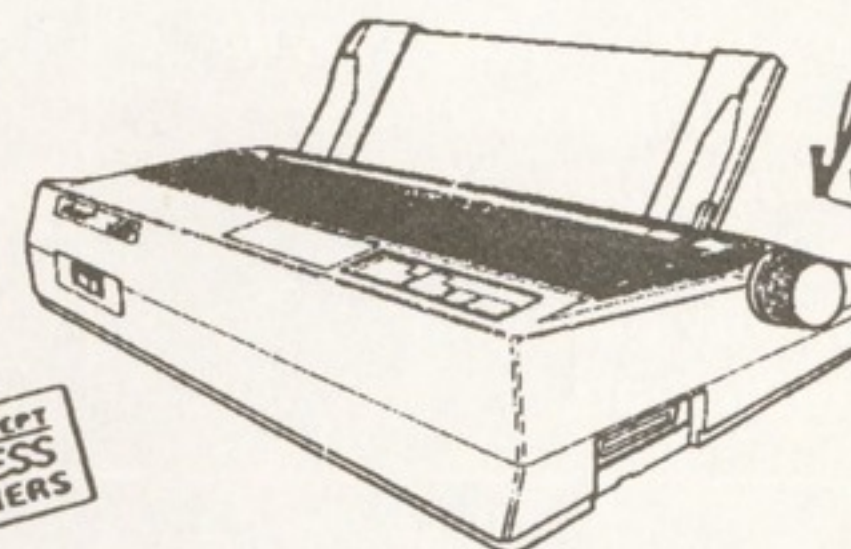


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COKTEL PARTY

Coktel Vision is one of France's largest software houses but probably remains unknown here save for their adaptation of Emmanuelle. Dodging every porny pun in sight, Andy Storer visited their offices and returned both shaken and stirred.

Coktel is going great guns this year with sales up by 120% in France, 170% in the rest of Europe and heading for a turnover of £3 million in '89. Not bad for a company virtually unheard of outside their native country and overshadowed by the better-known Infogrames and Loriciels. But the games market isn't their only concern.

It figures

Unlike the rest of Europe, educational software is big business in France with a market worth £20 million and Coktel has a large slice of the action. Everything from atlases to languages, Asterix to driving lessons fill its books to the tune of a turnover of £1.5 million a year.

The company is using this solid base as a



• Although more and of Coktel's graphics are being mastered on PCs running DPaint II, some development work is still carried out on STs and Amigas

platform from which to expand its Tomahawk label to capture a games-hungry Europe. Coktel estimates the combined value of the French, German and British games markets to be around £150 million – with you out there accounting for 60% of that figure.

But half the games buyers in Germany and Spain are PC owners. In France it's up to a quarter and yet over here it's less than 5%. Still, with cheaper and better PCs on the way all the time the only way must be up and throw in the lucrative and largely untapped US market, it becomes clear why Coktel is mastering all their future games releases on PCs.

Coding by the PC

Coktel's programming wing, Inference, operate out of Bordeaux and liaise with designers and graphic artists in Paris for the eight months or so it takes to produce each game. Screens and sprites developed on PC 386s running *Deluxe-Paint III* are sent its way to be pieced together in machine code with arcade action written in C. Inference's own language, a type of *Hypertext*, is used to compose the database for graphic adventures needing text. VGA graphics are treated as the standard – the 32 colours available finding their way onto ST and Amiga screens. Whilst VGA graphics for games are passable, PC sound is lousy. Coktel intends to bridge this gap and offer Amiga-quality audio by developing its own plug-in sound card and marketing it separately; a move already undertaken by a couple of companies in the U.S.

But, seemingly like every other software houses in Europe, Coktel's biggest problem is in finding good programmers. So if you fancy your chances of coding among the vineyards of France why not give them a call. ●

Games Coktel

Coktel's releases for 89 will all be available on PC, ST and Amiga, and comprise a diverse selection of graphically excellent entertainments.



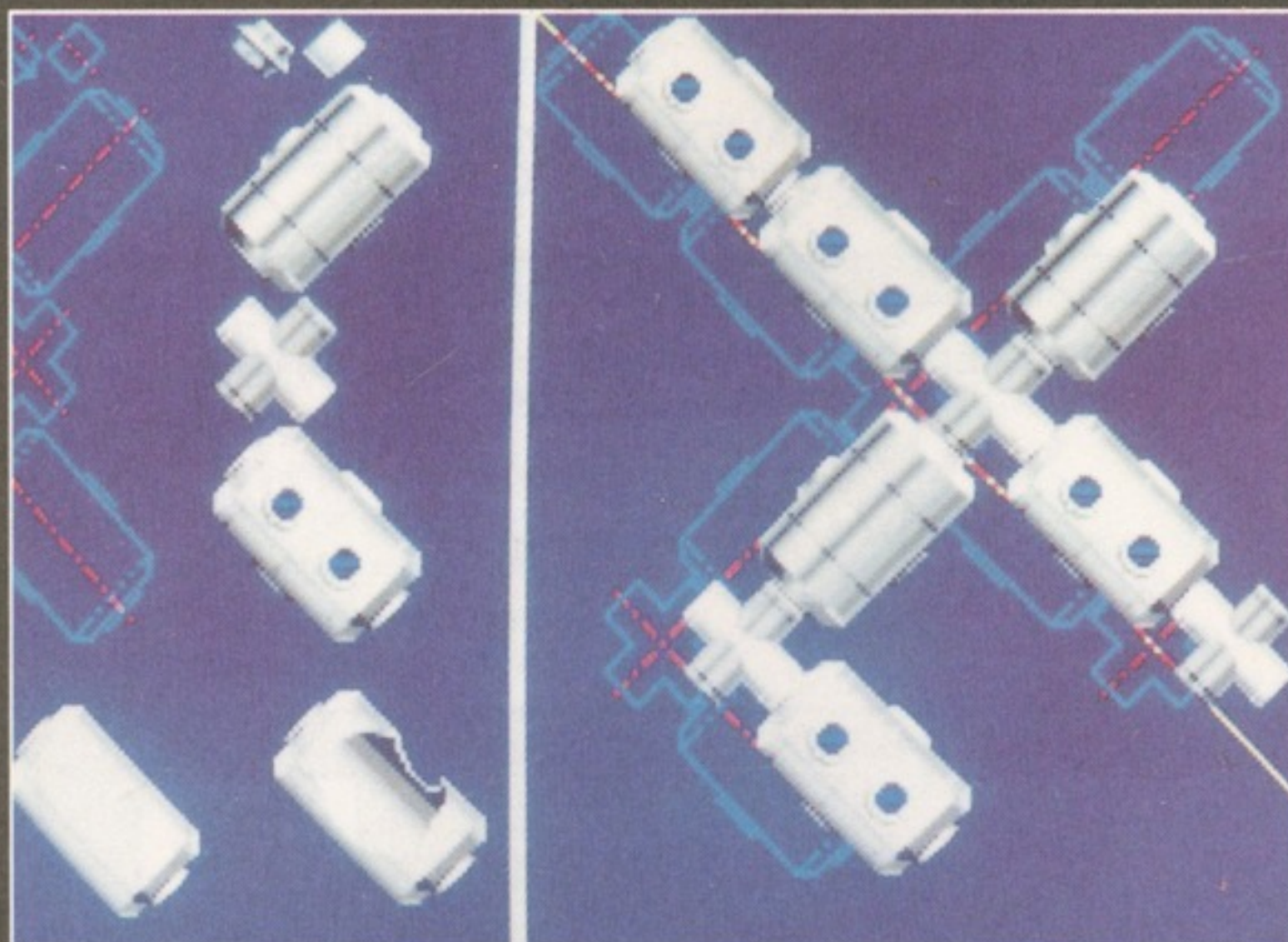
LEGEND OF DJEL

In this massive arcade adventure you play the part of Djel, a magician out to restore peace and harmony to a supernatural world best with sorcerers. Thirty scenarios present interesting mixes of action and strategy involving spell-casting and speedy animated combat in an outing that looks like delivering gameplay to match its graphics.



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A driving sim loosely based on the pan-African Dakar rally, in which you find yourself in a 4x4 dune buggy racing across desert wastes with on-line satellite navigation assistance. The eleven stages are all timed and it's up to you to beat your opponents while staying clear of obstacles such as camels and car wrecks.



LESS HERMES

A 3D strategy game written in conjunction with the European Space Agency in which you control a shuttle in a bid to build a space station and run a satellite park. After space-walks and robot arm manipulations you have to guide the shuttle back through re-entry. On landing you work out another flight path and return to orbit to make more profit from empty space.

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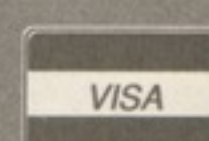
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AMIGA BLIT

Atari to go Amiga?

Read any of the various computer magazines that are available and, sooner or later, you're sure to come across a news item on the Epyx portable that Atari have gone to great lengths to snap up.

As reported in *AmigaBLIT* about three months ago, the machine is being produced by several members of the original Amiga design team, and Atari has been quick to play upon this. Sounds great for Atari so far doesn't it! Well, there is an extra little snippet that Atari US won't be so keen to tell you about. Rumour has it that it will be supplying Amiga-based development systems to software houses.

Before a machine is released to the public, it is common practice for hardware manufacturers to send development systems out to software houses so that they can develop products ready for the machine's launch. Unfortunately for Atari, the guys who designed the Epyx system are understandably great fans of the Amiga (which isn't surprising when you consider that they practically made it!). They have therefore used the Amiga as the basis for all their software development work.

Porting the development system over to a machine such as the ST has already been ruled out as practically impossible because the system makes extensive use of the Amiga's multi-tasking/multi-screen operating environment - no other personal computer is even capable of running it!

Greatest Ever CBM Show?

I must admit that I wasn't particularly looking forward to having to trek up to London for last week's Commodore computer Show - After all, I couldn't remember the last time a CBM show had been anything other than 'dull'. Sure, if it's bargains you're after then CBM shows are great. However, if like me it's new products and exciting announcements you want then you can bet that there's a very good possibility that you'll leave disappointed.

Surprisingly, this year's show was far from being dull - in fact I quite enjoyed myself and was pleasantly surprised by the amount of newsworthy products there.

Most exciting for me personally was the appearance of MicroIllusions' pro-standard MIDI sequencer, *Music-X*. After only a ten minute demo I can quite easily say that their really is nothing to beat this product... on any machine. *Music-X* beats competitors such as Steinberg's *Pro-24* and Dr.T's *KCS* in every department.

Commodore shows have always been a great place to meet people and around every corner I found myself bumping into people I knew (although the show Bar seemed to be the place where most were to be found!). Look careful among the vast crowds of people

and you'd have found the likes of Jez San of Argonaut (known as 'Cheryl' to his friends!), Dave Jones and Tony Smith of DMA Design (hi chaps! I know you're reading this) and even certain ST programmers such as Wayne Smithson (currently working on the ST version of *Blood Money*, which is supposedly going to be the best thing STers have ever seen for their machines!).

Rombo used the CBM show to launch the Amiga version of their popular ST frame grabber, *VIDI*. Like the ST version, *VIDI* Amiga is a realtime device that captures frames in an astonishing 50th of a second. The version being shown was only pre-production and did not provide any colour support - that's being incorporated as we speak. How much for this wondrous piece of technology? I hear you cry. Would you believe me if I told you £99?

This year's show was best rounded up by a



• I don't know, the kind of rabble that turns up at these events! From right to left, they are: Dave Jones, me, Tony Smith and Wayne Smithson.

rather irate pensioner that walked up, tapped me on the shoulder and said "Oi!, there's nothin' 'ere for me '64... nothin' but bloody Amigos everywhere you look!".

Hybris Discovery

Here's a quick cheat for those of you struggling with Discovery's excellent shoot-em-up *Hybris*. Load the game and wait for the high score table to appear. Type *COMMANDER* and press the fire button to play. Press 'F10' during the game and your ship should start to glow. This means that your ship is invincible and you've got unlimited energy and smart bombs. Pressing 'F2' to 'F6' will allow you to get the five different add-ons and pressing 'F9' will advance you onto the next level.

Jason Holborn

Virus' Revenge

In the constant battle against the dreaded Amiga viruses, it seems that the virus creators will stop at nothing in an attempt to outwit the designers of virus killers.

The name of *VirusX*, written by the acclaimed American programmer Steve Tibbet, is seen as a symbol of the battle against viruses. and the program was seen, until recently, as the best Amiga virus killer available. To show his good intent, Steve includes the source code with every new release of his program. Unfortunately the virus programmers have used his own source against him by producing a rogue version of *VirusX* that instead of killing viruses, writes viruses to your disks. This rogue *VirusX* can be identified by its version number (3.3). If you receive a copy of *VirusX* with this version number, you are strongly advised to erase it as soon as possible.

The most recent release of the genuine *VirusX* is version 3.2. It is understood that Steve will skip version 3.3 of *VirusX* and go straight to version 3.4 for his next release.

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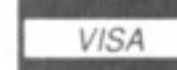
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YOUR FORMAT

MACHINE-SPECIFIC COLUMNS

PC UPDATE

What's the ANSI

Strolling around through my MS-DOS manual the other day (boy, I lead an exciting life) I came across the entry for the ANSI system driver, ANSI.SYS. This little program seems to cause a lot of confusion among new and seasoned users alike. It's actually just a screen driver which you can install when you start your PC. It offers a series of simple commands which your PC screen will obey and covers cursor movement, screen colours and the like.

To install the ANSI driver (ANSI stands for American National Standards Institute) you need to copy the file ANSI.SYS onto the floppy disk you start your machine with, or to the root directory of your hard disk, if you start your machine from there. You then need to edit the file CONFIG.SYS, which must again be on your start-up floppy or in the root of your hard disk, so that it contains the line DEVICE=ANSI.SYS, in addition to any other commands. You can use any text editor which will produce ASCII text to do this - RPED, for instance. Once you've installed the driver, restart your PC. You'll notice no difference immediately, but the ANSI commands are now available to you when you want to use them.

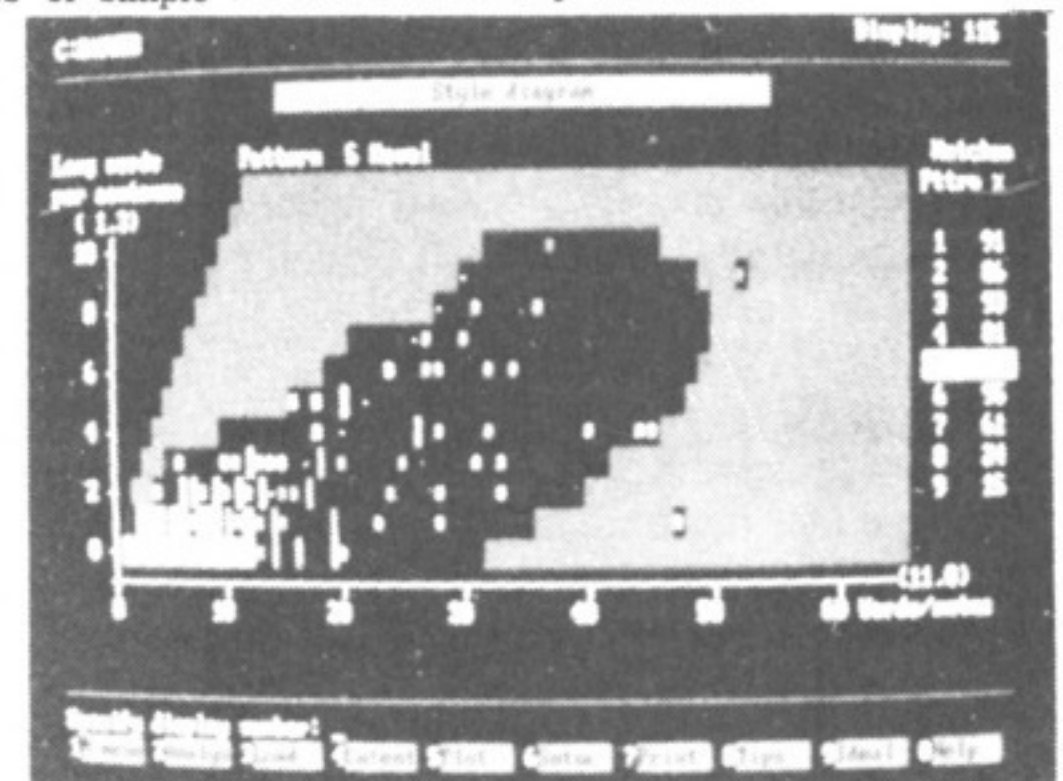
One of the easiest ways of using the ANSI driver is via the PROMPT command. As well as having a number of commands of its own (try PROMPT \$p\$g for a start), PROMPT can also be used to issue commands to the ANSI driver. The \$p\$g command puts the current directory path within the normal A> or C> prompt. This in itself is an almost essential requirement for anyone who works with files in more than one directory.

The ANSI commands all start with an escape character, which can be represented within PROMPT by \$e. Two of the most useful ANSI commands are those to memorise the position of the cursor and to restore the cursor to it. Using these two commands (which have the rather strange syntax \$e[s and \$e[u) and the command to reposition the cursor \$e[x;yH, where x and y are the row and column numbers respectively, you can produce some very interesting screen effects. Try this piece of apparent gobbledegook: PROMPT \$e[s\$e[1;67H\$d\$e[u\$e[p\$g. The case of the command letters is important and the only space should come between the PROMPT command and the parameter string. See if you can break the command down into its component parts to see what it does. You can build this PROMPT command into your AUTOEXEC.BAT file if you don't want to have to type it from the keyboard every time you start your machine.

The words what I write

Earning my living entirely from putting words to paper has made me increasingly conscious of my spelling and grammar. I've never been particularly good at spelling, but a good spelling checker has taken most of the heartache out of my commonest blunders. Most of the time I can get it right, but it's amazing what you let through when you have only five minutes to catch the post.

A related issue is the style of the text and its readability. There are a number of factors which affect readability, and a new product from Scandinavian PC Systems (0895 679366) called *Readability Plus* aims to assess documents and point out pompous or over-technical writing. It does this in a variety of different ways, including counting the number of long words in your sentences, analysing the number of words not in an established 'core' of common words (which may indicate too much jargon), and scoring on the number of complex sentences in a particular piece of text. It uses several established measures, including Gunning's Fog Index and the Flesch reading ease index. At £89.00 it may be worth investigating, particularly as you can claim a copy at £74.95 under a current special offer.



• The theoretical 'teardrop' shape that good writing should fall within, according to Readability Plus

Norwegian Blues

I don't want to make too much of the sad demise of the Parrot Corporation, especially since it has done sterling work in duplicating the *PC Plus SuperDisk* for the last year or so. However, it's hard to resist some of the many headlines that spring immediately to mind, concerned with ex-parrots and those that have joined the choir invisibile. Perhaps the final word should be left to the poet Bertram Carrot, a devotee of the E.J.Thribb school of poetry.

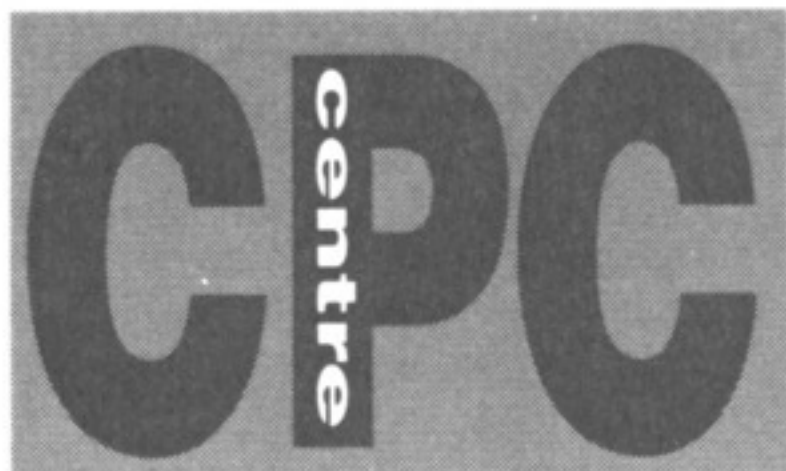
Farewell then,
Parrot.
Few people
knew you were
sick,
when they used
your name
in vain.
It seems you
slipped
one disk
too many.

Simon Williams

Pop-DOS for mice

I was reviewing Logitech's new PC mouse recently and apart from noting what a nice mouse it is to use, some of its supporting software proved particularly impressive. As well as the usual mouse driver, it comes with routines to 'mousify' otherwise keyboard-only applications, and a mousey front-end for DOS.

Pop-up DOS, as the utility is called, is what it says, a semi-resident mouse-driven DOS utility. It combines Xtree-like directory and file handling with a good little card index, text editor and utilities such as diary and alarm. The only thing which prevents me from replacing my all-time favourite TopDOS, is that the editor has to be called from within a sub-menu. I'd still much rather press [F2] and type a file name. Only the card index, diary and alarm are memory-resident, too. A nice try, but it needs a bit of tidying round the edges.



Licensed to sell...

Considering this is just about mid-summer (though you wouldn't guess it looking out of your window) and the traditional low-point of the games market, things aren't looking too bad. Out at the moment are Hewson's *Stormlord* (loved it), US Gold's *Forgotten Worlds* (liked it) and CDS's 'interactive' *Tank Attack* (i.e. you get a board game and a so-so computer game too).

In the offing there is a veritable blizzard of license tie-ins. Coming soon are Domark's *Licence to Kill* and from Grandslam the eagerly awaited *Thunderbirds*. And there are not one but two Arnie Swartzenegger titles - *Red Heat* and *Running Man*.

My bet for the biggest amount of money shelled out for a single licence, however, rests not on any of these. Allow the shy, retiring people responsible to introduce it themselves: 'US Gold' (for it is they) 'on behalf of Lucasfilm Games proudly present the largest and most impressive computer game/film tie-in ever seen in the history of the computer games industry.' Yup, *Indiana Jones and the Last Crusade* is coming soon.

The argument against massive film/TV tie-ins, of course, is that such grossly stupendous amounts of money are involved in securing the license in the first place that there's only about fourpence left in the kitty to finance the development of a game to match. A notable exception is Ocean's *Robocop*, which has not fallen from the number one spot since New Year.

Still, Lucasfilms has such financial clout behind it that shortage of funds will not be a problem (nor, indeed, any excuse). Expect a tidal wave of promotions as the computer people attempt to surf home on the shoulders of the film people...

Not an anorak simulator

'What, a pinball simulator? A ridiculous idea, it'll never sell!' So you'd say, and you'd be completely wrong. Not only did it sell (for Code Masters - who else? - last year, among others) but if there's any justice it's about to sell again.

Of course Electric Dreams - a division of Audiogenic - is well aware of the potential dangers of marketing a pinball simulator. The very name, *Timescanners*, suggests voyages through the vastness of space or some such

cobblers, and the advertising and packaging is trying hard not to say 'This is a pinball simulator and you'd be an anorak to buy it.' And no doubt Rik 'The Hitman' Haynes will be doing his usual heartless hatchet job. I half expected to be doing one myself, truth be told.

But when a CPC game is as smooth, as fast and as addictive as this one, cynicism is the Wrong Answer and a Bad Thing. *Timescanner* has to be as furious and frantic a game as I've played all year, and I'm typing this extrafast so I can get back to it and have another go. Oh play it yourself and you'll see why I'm so keen.

Many hands making light work

Latest on the Virgin/Mastertronic lightgun is that we can expect a mid-July release. I've yet to get my hands on one, but I can reveal exclusively that it will be the best games hardware offering of 1989 for the CPC.

Steve Carey

Pandora competition

CPC Centre on behalf of Express and in conjunction with Swift Software proudly presents... a competition.

You may recall a fortnight ago this column revealed details of Pandora, a promising new machine-code program generator which can be used, so Swift claims, with even a limited knowledge of BASIC.

Although it uses a form of BASIC, however, Pandora programs are semi-compiled before they run, so it works fast. In place of GOTO, for example, the command LABEL is used extensively, followed by an identifying name which can be jumped to very quickly with a GOTO label instruction. Then, during compilation, labels are replaced with the actual address in memory of the next instruction, so that GOTOs are executed instantaneously. (There will be a full review of Pandora in the August issue of Amstrad Action, out on Thursday July 13th. Don't miss it!)

Pandora normally costs £29.50 (disc), for which you also get a free calculator/watch. But you need not shell out after all, because we have five copies to give away!

All you have to do is to tell me who or what Pandora is or was. Show your classical knowledge (hint, hint) by jotting down the answer on a postcard or the back of an envelope, and send it to: Steve Carey, CPC Centre, Future Publishing, 4 Queen St, Bath BA1 1EJ to arrive not later than Friday 30th June. The first five correct answers plucked by my own fair hand from the CPC Centre top hat will each receive a copy of Pandora. The judge's decision is final.



• Timescanner - so pinball simulators can be cool after all!

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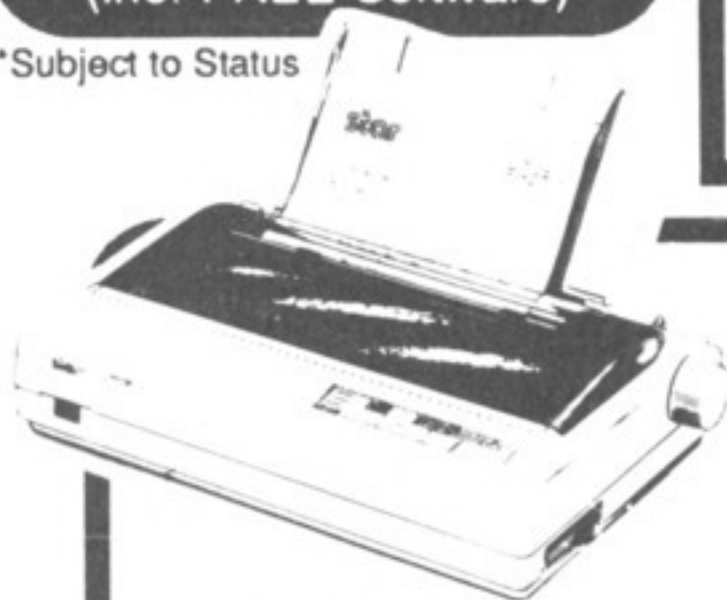
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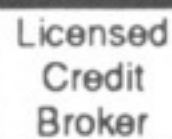
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YOUR FORMAT

MACHINE-SPECIFIC COLUMNS



Sound design

Despite being the wonderful computer we all know and love, the Spectrum's music-making capabilities leave several lots to be desired.



• The Atari ST and Commodore Amiga may wipe the floor with the Speccy, but when the SAM Coupe comes out will the tables be turned...?

Frankly, the 48K's beep makes those tunes you get when you've phoned someone and been put on Hold sound pleasant. The industry standard AY chip found in the 128/+2/+3 is an improvement, but still sounds a bit Kylie-esque to me, I'm afraid.

The good news is that we could at last have a real treat for the auditory apparatus, thanks to MGT's long-awaited Spectrum-compatible Coupe.

MGT has just supplied me with some detailed info on the Coupe's internal sound chip, and it's ear-watering stuff, Spec mates. The SAA 1099, as it's known, could well be one of the Coupe's strongest features, with six-channel, eight-octave stereo sound and wave form, amplitude and envelope control.

The manufacturer - Philips - seems to have designed the chip with games in mind, and its detailed tech specs seem to suggest that this is one sound chip with definite star qualities! Output is through the TV, and there's even a socket for Walkman headphones - a definite boon to all the families who have to share the main telly with your Spectrum and associated sound FX.

Of course, the SAA 1099 isn't the only attractive feature of the SAM for those of a musical bent. The machine comes fitted out with MIDI ports as standard, making the computer the best musically for the price, and therefore an obvious choice for back bedroom/garage bands the country over.

Much as I hate boasting of how well the Coupe compares with other machines, I feel it's necessary. A lot of people are writing the machine off as little more than an expensive Spectrum with go-faster stripes - and, quite plainly, that's unfair. When it comes to making sweet (or unsweet, if you're playing *Professional Ninja Mutant Death Genocide Simulator* etc) music, the SAM is potentially one of the best machines on the market and without the usually fat price tag to match.

Take the ST, for example. Its three mono channels are easily beaten without sweating any silicon, and even the Amiga's highly-acclaimed audio skills are pretty much humbled, I'm glad to report.

Of course, it's not just down to size - what you do matters too. The good thing is that if software houses do anything to enhance Speccy titles for the Coupe, the soundtrack is the easiest and no doubt the first thing they'll look at - which means upgraders to the Coupe could be sampling stereoscopic sound almost as soon as they buy the machine. Hopefully, software houses will also be willing to exploit the SAM's other abilities and

help prove the machine's worth as a realistic and cheap alternative to 16-bit.

As the countdown to release continues, expect the following two things: (1) more information on the Coupe, and (2) an increasingly enthusiastic column as your columnist approaches near fever pitch excitement.

Upgrade worries

Staying with the SAM a moment longer, R A Dews from Yorkshire has written with some of his thoughts on the computer, and very nice ones they are too. He's not worried about the SAM's potential, but more about how much of it will be exploited by software releases.

He asks, "Will the software houses be bringing out upgrade programs to convert existing software, or will I have to buy a whole new game? And assuming that software houses don't bring out upgrades, what would be the legal position of private individuals who do? Secondly, the SAM has 256K RAM. If it takes 5 minutes to load 48K, will it take 26 minutes to load 256K? I would say a disk drive is a must. At current prices

You scratch my back

Here's another piece of evidence to prove that Spectrum owners are among some of the most generous and industrious individuals in computing.

PJ Bellingham has written in to tell me about a Scoreboard program he's written and used in his selected sport of gymnastics for a number of years without complain. It's written in BASIC, and therefore ideal for customising to suit your own chosen activity. In my case, freestyle washing-up.

The program's well-written, quite easy to use and free to all interested parties as long as they send Mr Bellingham an SAE (jiffy bag style) and a blank cassette. The address is 46 Woodside Road, Barnehurst, Kent.

If you're keen to repay PJ's generosity, all you have to do is send me a circuit diagram for the 48K ish 3 Spectrum. He and half the planet have been looking for Speccy circuit diagrams for years, and it's got to such a drastic state of affairs that if any kind-hearted person out there can let me know a source of these rare artefacts they will receive not only my undying gratitude but also some free software. Write immediately (if not sooner) to Robin Alway, Spex, New Computer Express, 4 Queen Street, Bath BA1 1EJ.

this will bump up the price to around that of an ST, and that's too much. For the SAM to succeed, MGT must make drives available cheaply - say £50".

The disk drive point is an important one in my opinion. Loading 256K programs from tape is pretty much impractical, and a cheapish disk drive is a must. The whole industry is moving away from the cassette - only the Speccy and C64 (excuse me while I wash my mouth out) keep the tape-based market alive. America and most of Europe have done away with the things, more or less. Providing them that cheaply will be difficult though, at least if MGT is planning on making a profit.

Time for a crossing of fingers perhaps? I don't think the question of enhanced Coupe software is going to be quite as big a problem as first thought. Advance orders of the machine look healthy, and the SAM's spec means it's worth enhancing games for.

Thanks to R A Dews for writing and for the favourable comments on the mag. If you've got anything to say concerning your rubber buddy/plastic pal, write to the usual address.

Robin Alway

Commodore show

A few weeks back was the 1989 Commodore computer show, which was held at its usual venue at London's Novotel. This year's computer show was touted as offering a slick new look and some exciting features. So Ian and I popped along to see for ourselves.

Friday at the show was packed this year because the schools were on holiday. The first Commodore show that I can remember was also during the holidays. As for the new-look Commodore show, it looked just the same as usual - like a Sunday market. About the only thing that did seem to be different was the lettering on the Arcade entrance!

This year's Commodore show was pushing the Amiga totally - it was almost impossible to find a C64 anywhere. Another thing that Database boasted about was the chance for visitors to ask programmers questions about the industry. The Salon Bourg was packed with budding programmers to be, asking all sorts of questions of their idols.

One of the great features of the Commodore show was the talk in Salon Bourg about television computer graphics. As we found out, getting into this could cost your life! The host said there were a lot of easier ways of earning a living. Have you ever heard of a BBC computer graphics coder becoming a pizza delivery man? It happens. What makes this part of the industry bad is the pressure involved.

To be totally honest, the Commodore show this year was packed, but there was not enough to keep us interested. And as for the new look - think again Database!

Coming soon

Street Cred Football, from Players Premiere (£2.99), should be hitting your local software store very soon, as development house Wow! has just finished converting the game from Spectrum.

Out now

Bomb Jack II has been re-released under Elite's budget label Encore. *Bomb Jack II* is very similar to the original, but with slightly different features. It's a better game than *Bomb Jack*, and is a very good buy for budget. If you can remember, a few years back the game was a real arcade game (which I only ever saw once).

You!

Remember, if you have anything that you want mentioned in Sector 64, then we will be pleased to hear from you. We like any kind of contribution, whether it's cheats, queries or advice. We're also here to help you, so if you have a routine that you're having trouble with, then why not write to us and we could write it for you and publish it in this column. And if anyone has loadsa cheats for the 64, then send 'em in.

Write to the usual address - Sector 64, New Computer Express, 4 Queen Street, Bath BA1 1EJ.

All queries that can be answered will be printed in this column - sorry, no personal replies.

Theory

This week we're going to take a look at scrolling. We're going to tell you the fastest way of scrolling the 64 screen without tricks.

Many games these days feature over 16 sprites, while having full screen scrolling. The processor obviously can't cope with doing all these things in one go, so the best way around this is to use a double buffer method.

For example, if your screen is scrolling down, then while it's going through the pixels

Screen flasher

This week's listing is useful when using your tape recorder to load long, tedious programs. It will flash the screen with colours from signals on the tape. This will make it easier to see whether the tape deck is loading. All we've done is change the vectors at #808-#809 to a place high up in memory which increments to the border. It's nothing big or special, but it does give the look of a fast loader.

```
0 B=53227
1 FORL=0TO20:READA:POKEB+L,A:NEXTL
10 DATA 120,169,128,141,41
20 DATA 3,169,15,141,40
30 DATA 3,88,96,96,96
40 DATA 238,32,208,76,237
50 DATA 246
60 SYS 53227
70 REM *THIS PROGRAM WILL GIVE YOU*
80 REM *LOADING STRIPES WHEN USING*
90 REM *YOUR C2N OR 1541 LOADING *
95 REM *DEVICES. *
96 REM *CODED BY IAN AND MIC. *
```

you slowly, frame by frame, update the backdrop onto a screen you can't see in memory. Once the pixels have finished, you display the screen you drew on and move the pixels again while drawing the backdrop to scroll on the screen which was just being displayed. If you keep doing this and vice versa, you will get a very smooth scroll in about 5 chars of processor time.

Ian + Mic



• Look out for the C64 version of Anco's Kick Off - the Amiga version gets a 5-star rating in this issue of Express

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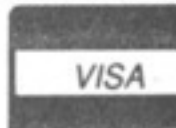
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Data remember

Norman Mann of Stoke asks me about databases. Which is best, he wonders, for cataloguing his classical record collection (with over two thousand items)?

Well, my favourite is *Masterfile 8000*. It offers very fast sorting into order and selection (e.g. just your Beethoven CDs or just your piano cassettes) though this can be a bit involved. It's flexible and powerful and you can set up a variety of formats to display the info on screen or printer. £49.95 from Campbell Systems on 0378 77762. Works from the memory so you might run out of space on an 8256 with a very big list like Norman's.

Also worth a look is *AtLast Plus*. This is also fast and powerful, and stores its info in a very efficient way so is good for 8256 owners or for people who have very big databases (say a club or customer list of over 5,000 people). £39.95 from Rational Solutions on 0566 81511.

Mini Office (£29.95 from Database on 0625 878888) features a database as well as a good spreadsheet, dubious word processor, handy graphics package and comms module. Not quite fast or powerful enough for large scale use but nice for a small club or collection – and remember the other programs you get for the money.

LocoScript 2 users will probably go for

LocoFile (£29.95 from Locomotive on 0306 740606) which works from within *LocoScript 2* – the others work from CP/M's A> prompt. *LocoFile* lets you define card-index and in the middle of a document you can call up individual cards and paste the information into the document being written. Data files are interchangeable with *LocoMail* files making it ideal for *LocoMail* users, i.e. businesses and clubs. No limit on file size so good for hard disk owners.

All the above are available from mail order places for considerably less than the prices quoted here – try the ads in the magazine *8000 Plus*.

Pigg book of records

Strangest program: Perhaps the strangest BASIC program ever written for the PCW was that of the PCW owner in Avon who wrote a routine to produce screen dumps (i.e. a printout of exactly what appears on screen) on a 9512 daisywheel. The image was made up entirely of full stops and one screen took several minutes to print out.

● Do you know of any PCW superlatives? Send to: *The Pigg Book of Records*, New Computer Express, 4 Queen St, Bath BA1 1EJ.

Poetry in slow motion

Another classic poem 'improved' by *LocoSpell*. Answer below.

Twos bribing, and the slight toes
Did gayer and girl in the wade
All midst were the boosted
And the more rates outrage.

Answer: Lewis Carroll's *Tale of the Jabberwock*, anticipating the row over poll tax in the last line by a hundred years.

Basil Pigg



A 10 MIPS QL?

Perhaps the ultimate add-on for the QL is a transputer system.

About six QL users have a Concurrent Techniques transputer module connected to their QLs, via an interface designed by Quanta member Neville Smith.

State-of-the-art devices like the transputer and 1 Mbit DRAMs don't come cheap, and prices start at around £725 for a 1 Mbyte transputer system. An occam compiler will cost you another £275.

It might seem a bit daft spending £1,000 on an add-on for a QL that might only have cost you £80, but you end up with a system that will generate and display the full Mandelbrot set in about 100 seconds – probably faster than a Sun workstation costing 20 times as much.

Concurrent Techniques is on (0424) 721768. I should own up to a personal interest in this project, as I am related to Leon Heller, co-founder of Quanta, and concurrent proprietor. This hasn't influenced me in any way, of course!

More Bugs

Repeated string slicing can use up memory that cannot be reclaimed by the *SuperBASIC* garbage collector.

CLEAR, LOAD or NEW will get the missing

memory back. Putting CLEAR and/or RESTORE at the beginning of your program will avoid any problems.

If you have a JS ROM (type PRINT VER\$ to see which you have) and you SELECT ON one of the formal parameters of a procedure, you will get a "bad name" error message, with all parameters but the last one.

SELECT ON doesn't work with character strings, by the way. It does work with numeric strings, because of the coercion feature.

John Torofex

Archive Limitations

Not mentioned in the Archive documentation is the fact that Archive files are limited not by the capacity of the storage medium (100K or so on Microdrive, or 720K on 3 1/2" disk), but by the size of the index maintained by Archive.

In some circumstances, you won't get more than three hundred or so records into an Archive database, before the maximum index size is exceeded.

You can get round this problem to some extent by splitting up your database into several smaller files, but this is a bit messy. Moreover, Archive tends to become extremely slow with large database files.

The version of Archive supplied with the Xchange package for the PC is not subject to this restriction, as it uses B Tree file management.

Next week I'll show you how you can use advanced B Tree techniques on the QL, which allows you almost instantaneous access to databases containing thousands of records.

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Words of wisdom

Results of a recent survey of the software industry have shown that even in this day and age of DTP and high power spreadsheets, the single most common use for a micro computer is word-processing.

Let's hear it for IT

Integration of information technology (IT) into schools is a difficult task, so rarely does there seem to be any correlation between effort and results. The Times/Tandon European Newspaper Day ceremony held recently is an honourable exception. Middleton School, the winners in the primary class, come from my neck of the woods. So when I say I was truly astounded at the amount of work done, you can be sure I mean it. Children who might write one essay a week would manage five or six stories, the equivalent of a whole term's work, in one day. The commitment and enthusiasm of the teachers present was also a joy to behold. The contrast could not be more marked than with normal, trivial uses of computers. It shows that, with proper management, a computer is not just a mundane tool, but also a source of energy and creativity. Let's have more days like this!

Now, this startling revelation will no doubt be met with by waves of total indifference. Quite rightly too, as all Beeb users have long known this little fact. Wordwise+ and Interword are well beloved by thousands of owners for speed of use and simplicity, a great virtue considering the adiposity of many current WPs. Of course WW+ also has a very useful programming language built in. For example, you can easily get a WW+ program to strip out formatting codes, replacing them with text commands which can be understood by a typesetting machine. Another bonus is that plain text files in WW+ are plain, so copying files between machines becomes slightly less of a headache.

On the same theme

One good example of what you can do with the WW+ programming language is given by a program called Themewise. Written by Dr. Lawrence from the University of Nottingham's sociology dept, Themewise is a writers' tool that allows analysis of all the text files on a disk, and their recombination in different ways. Dr. Lawrence has promised me a review copy, but in the meantime if you want one, it is available as a shareware product at a cost of £5 +£2 p&p.

Wordy hint

Continuing the wordy theme, here are two hints. First, it's much simpler to copy text files from DFS to ADFS and back by just loading them into WW+, and then issuing a *DISK or *ADFS command and re-saving them. Also, a list of comments giving time, date, title and version number which can be kept as a standard file for insertion into your text helps you keep track of your work.

Andrew Brown

MSXTRA

Pac back!

I have been busily playing Grandslam's latest MSX release Pac Land, and find it to be quite faithful to the original coin-op - for better or worse.

For those who haven't seen the original, you have - as usual - to collect fruit and power pills. However in this version the perspective has changed. Pac Land is played against a horizontally-scrolling background, with you walking Pac from left to right, collecting fruit

Maze help

Good news for Caroline Kyle, a young MSX user who wrote to MSXtra asking if I could help her find the cross in the Konami game Maze of Galious. An avid MSX games player - Kevin, from N. Ireland - has been in touch, and he says that the cross is to be found in world three. To find it you have to go down the ladder from your starting position as far as you can, then go left until you find two floating platforms that you must pass. The next part is pretty vague, but using Popolon, you must jump and strike the wall in this area and the cross will be revealed. Anyone else having problems with games, please write to MSXtra. Like Caroline, you may be lucky and find an MSXer who can help.

etc as you go. Colours are used quite effectively, while sound effects are sparse but adequate. One problem was that the collision detection wasn't all it should be, and quite often I lost a life even though the characters were well separated. This means that you will have to be spot on when you try to jump any "nasty" objects. Another quibble I had was that the supplied instructions were pretty vague as to how you actually start the game. I found that pressing the Space bar only gave you game "credits"; it's the no. 1 or 2 keys that start you off. Also, the loading instructions are wrong, and it should be BLOAD"CAS:",r and not as printed.

These niggles apart, Pac Land is not a bad game, well converted to the MSX. Price is £8.99.

Identity crisis

Stephen Elford of Plymouth writes to ask if the Toshiba HX/10 computer he owns is an MSX 1 or 2 machine. Well, Stephen, on power up, you will notice that on your computer it says "Copyright Microsoft" etc, and then the version of BASIC included in your computer's specification. You will see that on the Toshiba HX/10 it says version 1.0. This means that your computer is an MSX 1 machine, and lacks some of the MSX 2 commands needed on the latter for its extra features, such as higher resolution screens and greater colour choice etc.

Stephen also asks if Express could lengthen my column, and I'm sure the Editor would oblige, but only at the expense of width - i.e. it would be twice as long and half as wide! Anyway, Express could never afford me if the column were twice the size - I don't come cheap, you know!

Keith Neal

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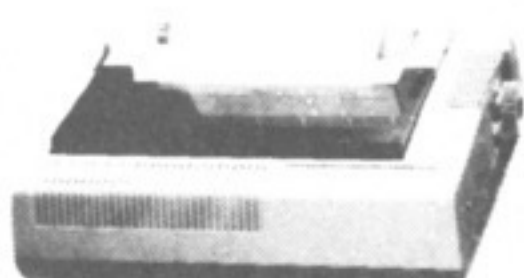
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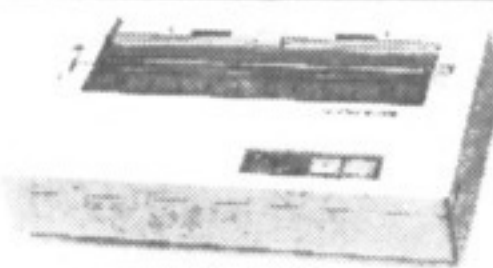
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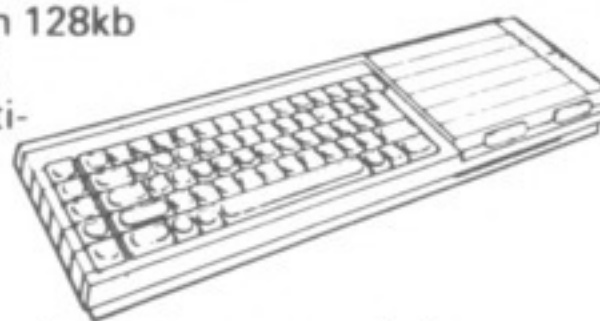
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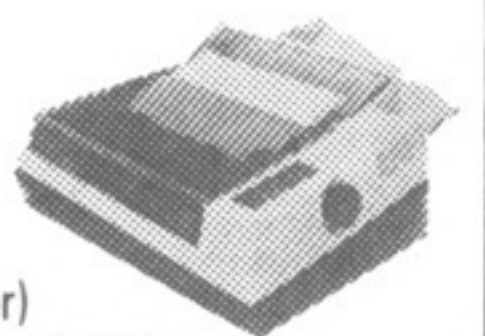
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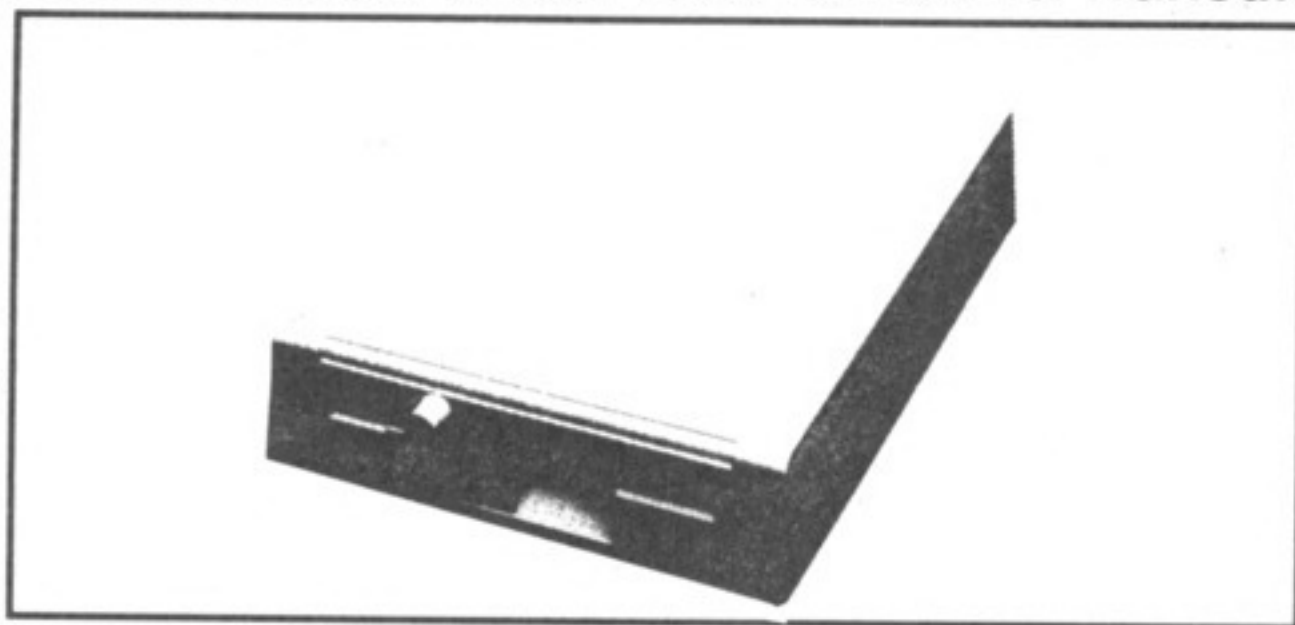
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ANTICS

Roadshow

Location shooting

Rob Berry sent me a letter brimming over with enthusiasm which included some very useful tips for the programmers amongst you. First is the memory location used to generate random numbers. It's 53770 (decimal). To make use of this location to generate say, a random number between 0-9, then type `random=int(peek(53770)*10/256)`. Apparently, this method is much faster than using the RND command from Atari BASIC.

If you want to boot-up from your disk drive or tape then Rob has a little wrinkle which allow you to do this without having to switch off the computer. Enter `x=usr(58487)` whilst holding down the `start` and `option` keys. You will hear the computer make its normal bleep, press return and the machine will reboot.

How many times have you written a BASIC

Letters begin

I've had lots of very interesting letters from Atari 8-bit users up and down the country telling me what they like to do with their machines and what they'd like to see in their column. It's nice to know that you're interested and motivated enough to repay the publishers faith in providing an 8-bit column by reading and taking an active part in its future. Keep it up, huh?

program that you'd like to protect from prying eyes? By putting these two lines of code at the end of your program, you will be able to stop anyone from listing your code.

`32000 FOR I=PEEK(130)+PEEK(131)*256 to PEEK(132)+PEEK(133)*256: POKE I,155: NEXT I`

`32100 POKE PEEK(138)+PEEK(139)*256+2, 0: SAVE"C:DUMMY":NEW`

After you've finished debugging your code, ensure the tape deck is ready for action, type `GOTO 32000` and press return. The program will then be saved. To load the program use `RUN"C:` and the program will be protected. If you're a disk user, then substitute D1 for C in line 32100.

Thanks for those tips, Rob, I shall try to dig up some trinket with which to reward you.

Top ten time

I had a long and very interesting missive from Ms. Linda Tinkler of Wirral, Merseyside.

Linda uses *SpartaDos* (reviewed *Express* 27) and is very happy that it allows her to make use of double density with a drive upgrade such as the U.S. Doubler from ICD. She also supplied a 'top ten' (actually a top 14!) of her favourite software packages, which included such evergreen classics as SuperScript, Pole Position, Leaderboard and the HitchHiker's Guide to the Galaxy.

Several correspondents have also listed their favourite software titles. There must be lots and lots of really good software out there that many of you who are new to the world of Atari 8-bit are completely unaware of, so from the next *Antics Roadshow*, I shall try and dig up some of the classics of Atari computing to review as well as anything new that arrives at the office.

Edmund Blake

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TECH TIPS

Problems with your computer? Express's Agony column has the answer. Write in strictest confidence to Uncle Techtip.

Best tips win a freebie - so don't forget to tell us your address and machine

HELP!

Hydraulic RAM?

I own an Amiga A500 and am very happy with it (Oh, you don't actually use it for computing then? - Uncle Techtip) but I would like to ask a few questions, here goes:

1. I used to own a Spectrum+ (lucky you can't see me blushing) and I would like to know whether *Green Beret*, *Head Over Heels*, *Way of the Tiger*, *Jack the Nipper*, *Cobra*, *Fist I and II* or *Last Ninja* will ever be out on the Amiga?

2. Can you get viruses from the public domain or commercial software?

3. I was playing *Operation Wolf* on my Amiga and I completed all the levels, saved all the hostages and blew up the final helicopter. But then there was a picture of an old man saying I had failed in my mission, did I complete the game or what?

4. Does the printer port send pulses? If it does, then my friend Yossir Khan has thought of a good way to link an hydraulic chair to the Amiga.

Thanks for listening.

Zaki Ali, Croydon, Surrey

• 1. Extremely unlikely with the exception of *Last Ninja* which I believe is currently being converted.

2. Do you mean for further distribution or to become infected with them? If the latter, then yes, it is possible to be infected with a virus from both PD and commercial software. The Amiga is

particularly vulnerable (which is the fault of the users, not the hardware). Follow the guidelines in Express issue 19 to avoid the virus.

3. I think you can assume that you were unsuccessful in your attempt to complete the mission.

4. The printer port does indeed transmit data signals to hardware attached to this port and it is possible to address individual bits of this port thereby forming a primitive control port. To do this you can use BASIC's *lprint* command i.e. *lprint chr\$(255)* would switch on all the bits of the port, *lprint chr\$(170)* would switch on alternate bits etc. The question is, just where are you going to get a hydraulic chair from?

HELP!

Spectrum and MIDI keyboard

I own a Spectrum +3 and a Farfisa FK58 keyboard. Please could you tell me what equipment (e.g. cables, interface or software) I need to link them together as I know absolutely nothing about MIDI. Also, is the Epson LX800 compatible with my computer (using Tasword 3) if I connect it with an Amsoft PL-1 cable?

Andrew Downs, Guisborough, Cleveland

• Do you want the good news or the bad news? The good news is that the Spectrum +3 has a built-in MIDI port. The bad news is that it's non-standard! You must buy an interface if you want to access a MIDI instrument from the humble Spectrum. For a suitable interface

supplier try MGT on 0792 791175.

Software? Well, you could try writing your own - the 'MIDI' port can be accessed directly from Spectrum BASIC, failing that, have rummage through Express advertisers where you will turn up many companies supplying software for your needs.

TIP

Deus exit machina

I read with interest the letter in Express 30 from K Ballard regarding the bug in *Populous* affecting disk drives over six months old and would like to relate to you my experiences of this before someone goes out and makes an expensive mistake.

About a month ago I bought *F16 Combat Pilot* for my three-year-old ST and twin half meg drives. I was unable to get it to load as it kept

To cut a - very, very - long story short, I took the computer to another engineer in Preston and at last found out the problem. The drives are running at the wrong speed. It would appear that the new drives run at a slower speed than the old drives and it is this that causes all the problems!

Nigel Blythe, Cheshire

• The problem is with STs before 1987, according to Electronic Arts, which will offer a service to fix the problem - phone its customer service department on 0753 46465.

There's a little utility in the public domain which allows you control over the speed of drives attached to the ST. Although it won't work with protected games software, it may help if you're using unprotected utilities or serious software. Call Star UK on 0224 593024 who may be able to help.



• *Populous* has had problems on some STs - but don't worry, there's a quick answer!

crashing the computer during loading. After returning it to the shop (where it worked perfectly) I tried three other F16s all with the same results. I had just spent over twenty quid on a turkey and resigned myself to looking at the screen shots until I could afford a new drive.

To console myself I bought *Populous* the next week in the hope that it would take mind off the disk drive problem. You can imagine my delight when the game loaded perfectly up you the menu screen, loaded the demo then crashed in the same way when I tried to play.

After much hair pulling, I decided that there was a few options open to me: a new ST, a new drive or try and get thing repaired. My brain must have stopped working at that point because I decided the latter was the cheapest option, so I gave the system to the local computer repair centre and left it with them to see what they could do with it.

Ten days later I was presented with a bill for £45 and was told the computer was now fixed. I rushed home and tried to load the two rogue games but to avail. I returned the machine to the repair centre whereupon, after one day, they declared they didn't know what the problem was.

HELP!

Island of Capri

Please could you tell me how I can find the start and end addresses of a BASIC program, so that I can peek the memory and convert the decimal values to hexadecimal and then use my hex loader to poke them into a different location? Also could you recommend a cheap but good book on bit-mapping?

W Cooper, Fair Oak, Hants

• I'd love to tell you, but as you haven't told me which machine you have and which version of BASIC...! Write again with full details for more help.

HELP!

Assembly instructions

Please could you oblige me by answering a few questions. I own a Commodore 64 cassette based system and I am about to buy an assembler for my machine, could you tell me which one it would be advisable to get, how much it would cost and where to get it?

A McCreadie, No address supplied

• The Commodore 64 was one of the better 8-bit machines and has consequently had a long run of popularity. This means that there is a large public domain software base for the machine.

BUG OF THE WEEK

I've discovered a little bug in the Amiga version of *Kick Off* which seriously impairs the scoring possibilities of being awarded a corner kick.

Sometimes, before you've selected the angle to play the ball, all of your team's players inside the box remain frozen to the spot. The clock continues to count down, but no-one can move!

Roy Crimmens, Sunderland, Tyne & Wear

• Congratulations! Your bug has just won you a year's subscription. Anyone else like one? Then get writing...

• *Tribolium Confusum*. The four species of this genus which occur in central Europe are found in the powdered wood of decaying goal posts and have highly adhesive properties when trodden underfoot



By contacting a supplier of this type of software (basically, utilities, games etc., which the programmer has relinquished all claims to and which can be distributed for the price of a disk or cassette). A rummage through any supplier's catalogue should turn up several assemblers. Try Wicked PD on 0268 590571 who stock a large range of C64 PD and should be able to help.

TIP Missing mouse

We are pleased to be able to answer two queries from this week's *Tech Tips* (Express 30).

1. We still support the ZX81 (Good for you, it's a fine little machine - Uncle Tech Tip). We hold stock of over 50 ZX81 titles and carry some titles for the 16K Spectrum also.

2. The correct name for Salmeco is indeed Samleco and the address given was correct but they ceased to trade almost two years ago. We are still in touch with the ex-managing director and we will endeavour to solve the original problem. For your information, the machines were not manufactured by Samleco, but by an associated company who also ceased to trade. They were indeed badged by Rotronics who went into liquidation in November (this is becoming a veritable Who's Who of failed computer companies).

If you have any other queries of this nature we would be pleased to help. Richard Gandy, Capri Marketing LTD, Bucks. Tel. 049481 5677.

• Providing, presumably, that you're still in business when we go to press! Seriously though, thanks a lot guys...

HELP! PC plodder

I've read your magazine for the last twenty weeks, I have an Amstrad 1640 HDECD and although it is fine, I would appreciate help on the following subjects.

1. I know I can increase the RAM, but what size increase is sensible for the processor to continue efficiently?

2. Can I change the processor if needed?

3. Can I change the EGA card for a VGA card?

4. Can I use a blitter chip and sound chip?

5. Is it better to buy a new machine? (i.e. cheaper, less unwieldy)

The reason that I ask is that I would like to produce my own games creations as a hobby.

C Hilton, Lout, Lincs

• 1. Contemporary sources advise on a megabyte at most. Few commercial programs make use of the extra memory and you have to write tricky bank-switching utilities to use anything more than the 640K directly addressable by DOS anyway.

2. Why? The usual processor replacement for PCs is from 8086/8088 to the faster V20/V30 chips. The Amstrad machines run as fast as they're ever going to so don't bother.

3. Yes.

4. No and Yes. There's no blitter chip available for the Amstrad but there are various sound boards (not 'chips') that can be plugged into a free slot.

5. For games writing? Probably. Sell your old monster and buy a nice new ST or Amiga.

HELP! From large Acorns...

Is a TV modulator feasible on the Archie (and would any existing modulator fit it?) and would the 10% speed increase affect the playability of some existing games by making them too fast? Also, could you advise me on the future of the Archimedes 310?

Joel Grounds, Llanfairfechan, Gwynedd

• As for the first bit of your letter, I'm afraid it's no on both counts. The graphics ability of the Archie needs a monitor to be of any use. Existing modulators would not fit.

I've played *Pacmania* on the Archie and that was fine, so although the machine could conceivably be a little fast for some games, in practise I don't think it's something you'd notice.

The future of the 310? Well, unless Acorn takes a serious look at its potential market and the amount of cash it has to spend, thereby revising the pricing structure of the Archie and the 310 in particular, I would say the machine has a long way to go to become acceptable to a general market.

HELP! A pox on you

I have a few questions that I will be grateful if you answer.

1. If I write-protect my disks, can a virus still be able to get onto the disk?

2. Do you have to switch power to the computer completely off to erase any viruses in memory or will a soft reset do the job

3. Can you see the virus problem getting worse?

4. Are there any good virus killers on the market

Michael Derrick, Alloa, Scotland

• Ah, some easy ones to finish with...

1. No. Write-protecting disks makes them completely immune to infection.

2. Yes. A clever virus will always be able to dodge the soft reset. Switch off the machine and wait for a couple of seconds before re-applying power to kill any virus lurking in the memory.

3. No. The persons responsible will probably transfer their attentions to mugging, downloading porn and various other hooligan practises (Gosh, sounded almost serious on that one - Uncle Techtip).

4. Nothing that I've been able to find for the Archie. Maybe some kind Techtipper will call their favourite Uncle with the goodies.



• No modulator for the Archie - so no chance of Zarch running on your TV

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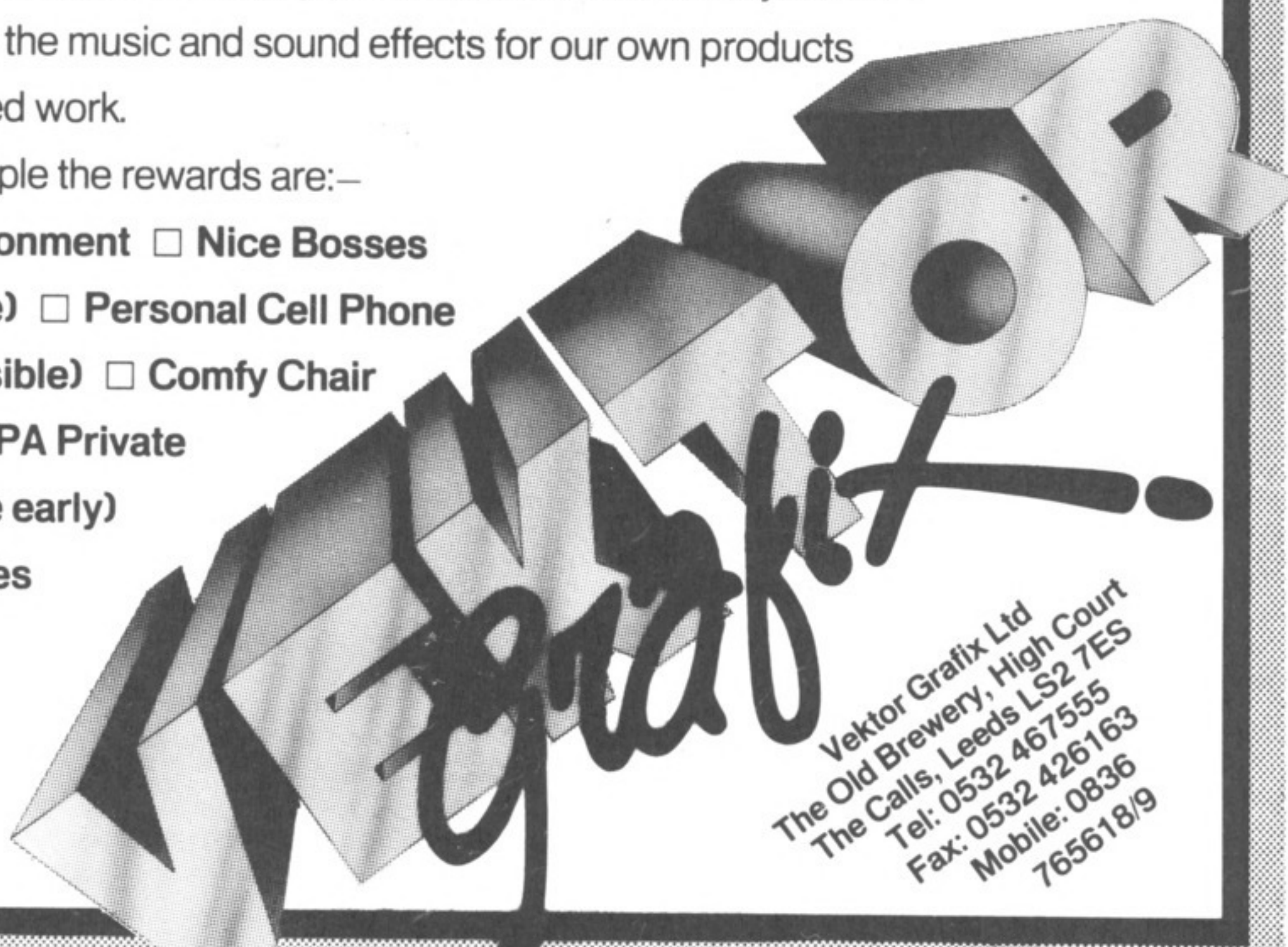
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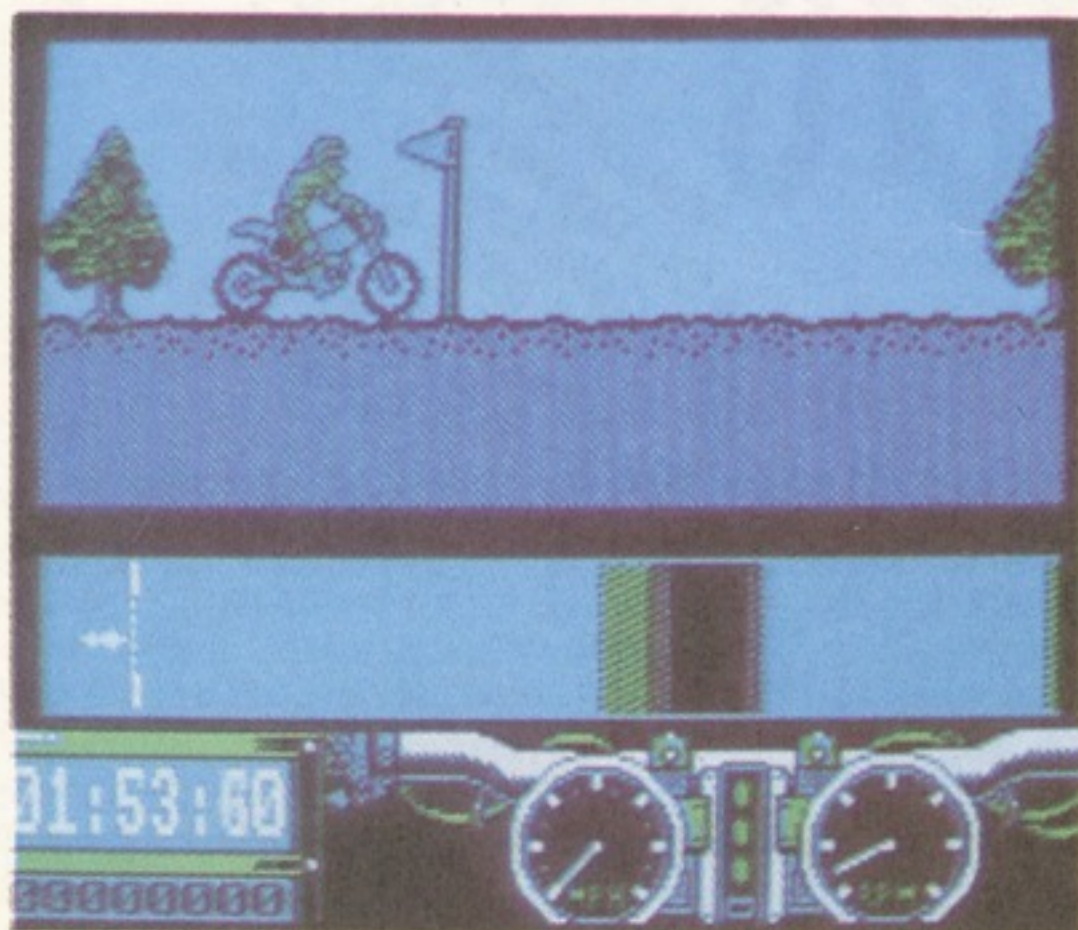
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● The football season may be long gone, but that hasn't stopped Anco bringing out the best soccer sim around. It's a pity Supernova didn't take a leaf out of Anco's book...

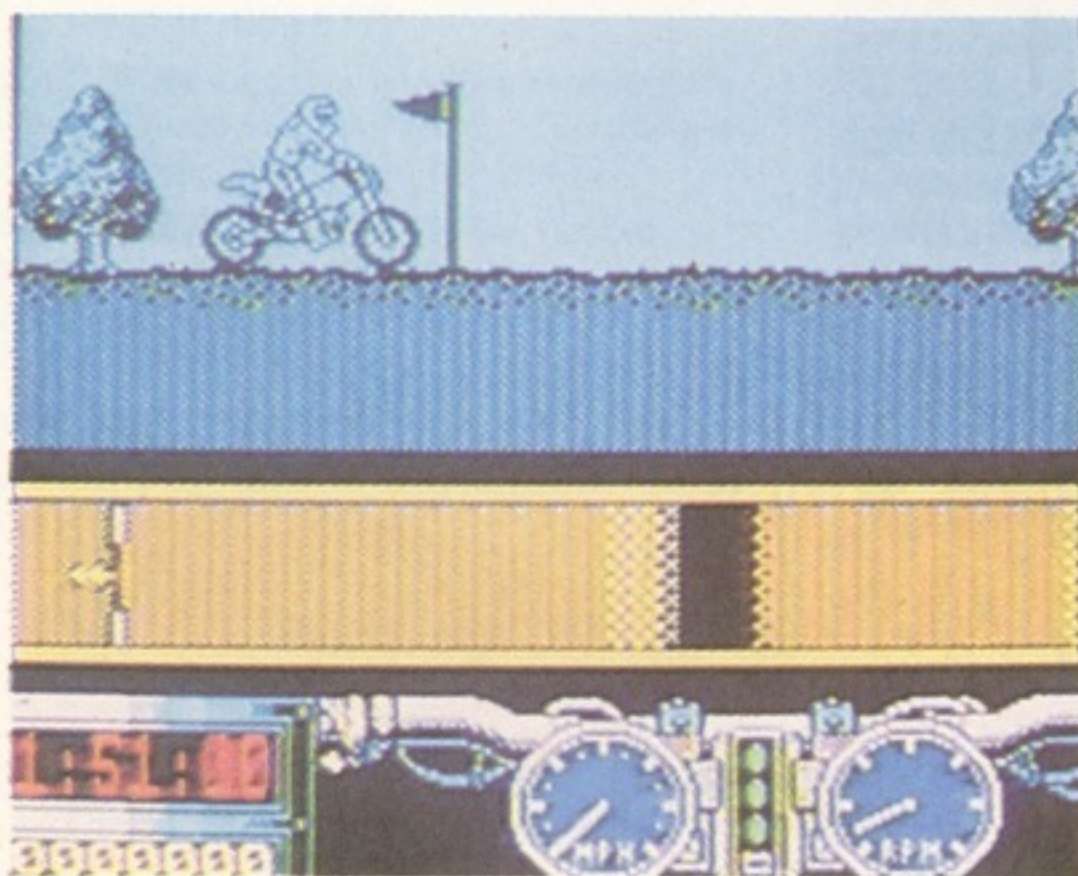
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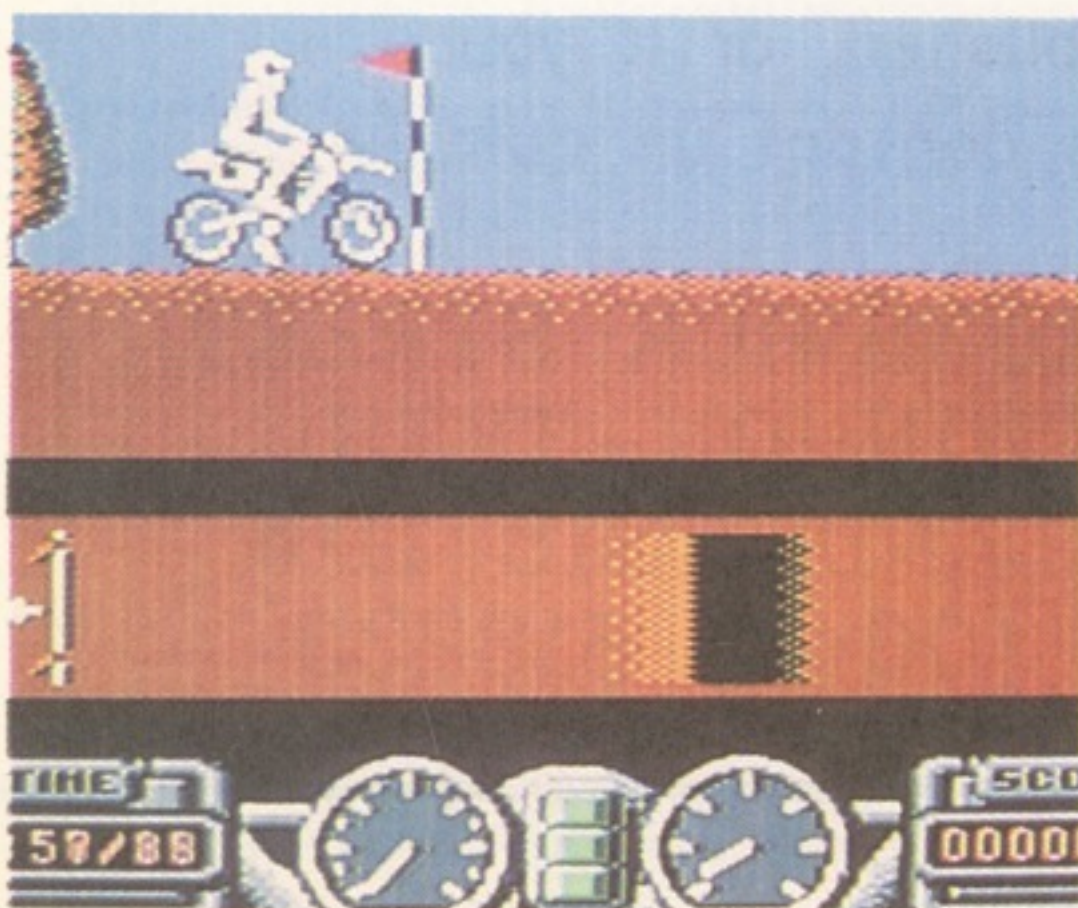
Spectrum • £9.99cs, £14.99dk
Also on C64, CPC
Out soon on ST, Amiga



● CPC: Barry Sheene would have to have a screw loose to ride this one...



● Spectrum: On yer bike



● C64: Best of the lot

KICK OFF

ANCO

Amiga £19.95dk
Also on C64, ST
Out soon on PC

Perhaps better known for its soft porn strip poker games, Anco has turned its attention to the infamous football-sim genre with *Kick Off*.

● VERSION UPDATE

Nothing surprising in the gameplay department, except that it plays the best game of footie around. Everything's here: throw-ins, corners, fouls, free-kicks, penalties, injury time, five skill levels (Sunday League to International), one or two players, league competition (up to eight players and a Save option), four team tactics (defensive, attacking, midfield, sweeper defensive), practice skills and penalties, match duration (10 to 90 minutes). In fact the only missing element is the football hooligan!

● GRAPHICS AND SOUND

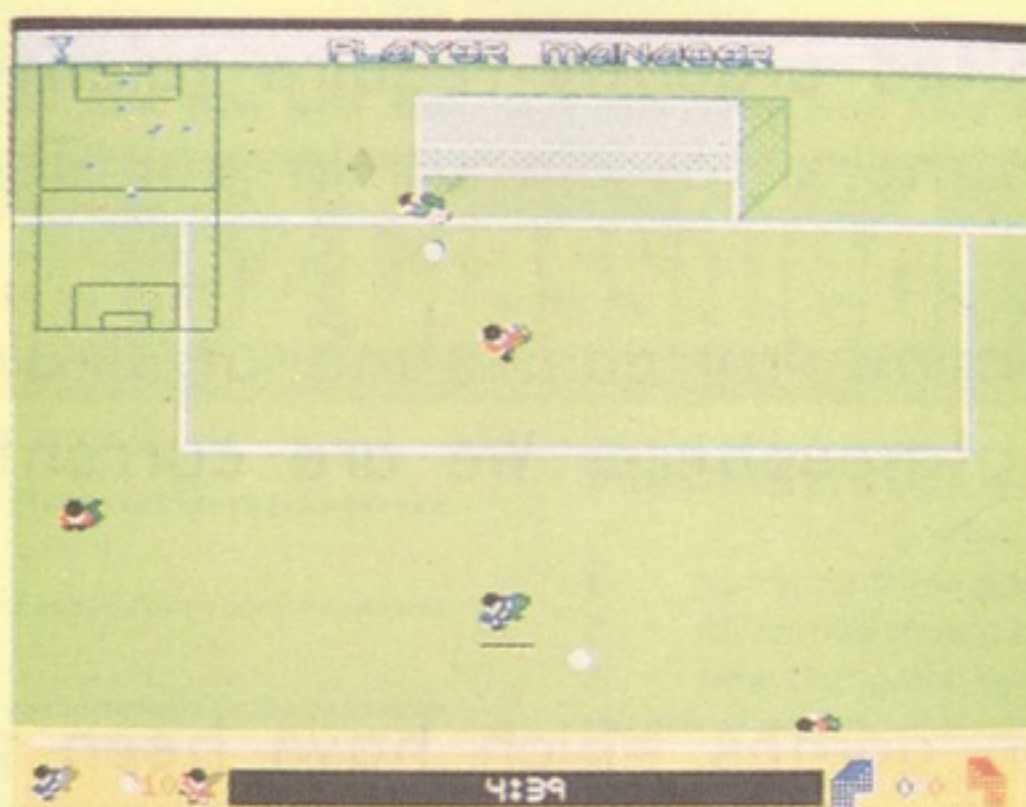
Kick Off is played overhead. Not much else to say, except the on-pitch furore is constantly kept to a high level. You never have time to relax during a game. All the sampled sound spot-effects are here, from the refs whistle to the cheering crowd.

● OTHER VERSIONS

ST *Kick Off* was reviewed in *Express* 24, but after

Latest Kick Off Scores

Bob Wade	1	Rik Haynes	2
Andy Smith	0	Rik Haynes	4
Damien Noonan	1	Rik Haynes	0
Jason Holborn	0	Rik Haynes	3
Steve Jarratt	0	Rik Haynes	2



● Amiga: The keeper takes it in the goalmouth

some extensive *Express* team play we've decided it also deserves a five star rating instead of the four awarded then. Gamewise, the ST version plays a lot faster than its Amiga counterpart, but is slightly less polished. Nevertheless it's still easily the best available on the ST. We haven't seen the C64 or PC versions yet, but they're both due for completion shortly.

Updates as soon as we have 'em.

● EXPRESS VERDICT

Latest Score... *Microprose Soccer* on the Amiga (full review next week) made a last minute play into the *Express* office during injury time, but was soon seen off by *Kick Off*'s superior playability and addictiveness. Final Score: *Kick Off* 5 *Microprose Soccer* 3. Well done, Anco you've finally got a result.

To sum up Brian, *Kick Off* is simply the best football sim we've played on any

micro. It's fast, furious, and immense fun. Go and buy it.

★★★★★

Rik Haynes



● The original ST version: Colour bar rasters at the ready in this full-screen epic



● Amiga: Red scores - but it's a game of two halves

Not as you might expect another Codemasters release, *Super Scramble Simulator* is a motocross bike race sim.

● GAMEPLAY

Played over 15 terrains, you'll have to take on 1:2 gradient hills, logs, water obstacles and lorries, while keeping an eye on the rev counter and scanner for any impending disasters.

● GRAPHICS AND SOUND

Your sprite and the backdrops are detailed enough, if a little bland, and there's the usual assortment of bike sound FX.

● OTHER VERSIONS

C64 *Super Scramble Simulator* is by far the best 8-bit version, with slightly more colourful backdrops, better audio and more playability. The CPC version is OK, but its audio quality isn't up to the Spec's spec. We haven't seen the 16-bit versions up and running yet.

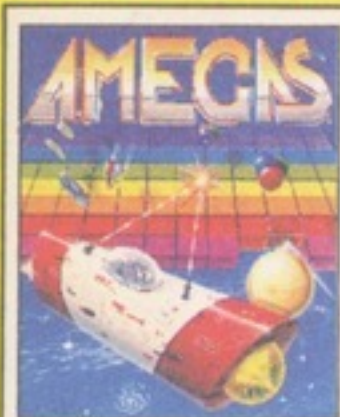
● EXPRESS VERDICT

Enjoyable for a couple of plays, *Super Scramble Simulator* smacks more of a budget release than a full price game.

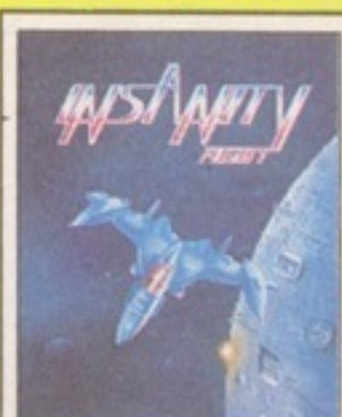
★★

Rik Haynes

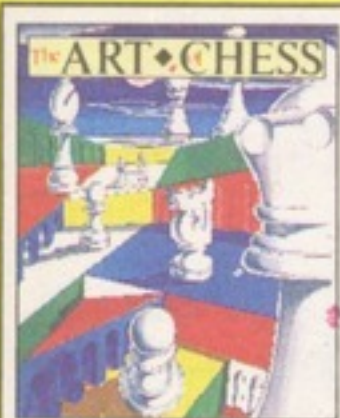
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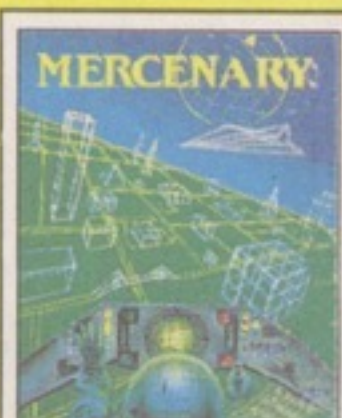
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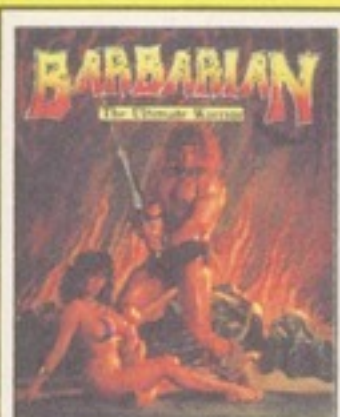
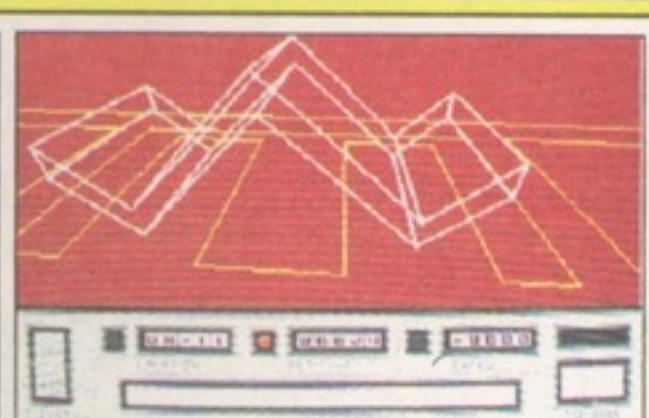
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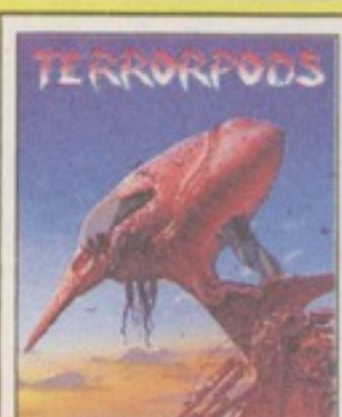
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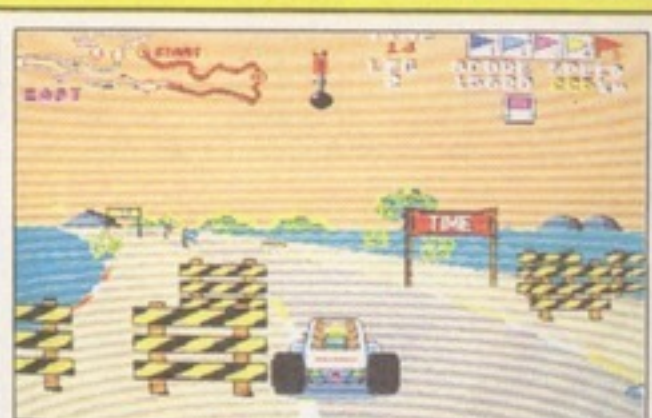
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Out soon on Spectrum, C64, CPC



• ST: Erupting into play

Pinball sims range from the mediocre *Code Masters* effort to Anco's addictive *Wizard*. With a touch of sci-fi, *Time Scanner* pitches somewhere between the two.

● GAMEPLAY

Time Scanner is a four-stage pinball game split on two levels, each requiring their own particular tactics. Whether it's lighting the lamps of the Volcano and Pyramid stages, or knocking down the targets of the Ruins stage, the method remains the same – namely to flip on your shift keys like crazy and use the space bar to tilt to your heart's content. Unfortunately, the features incorporated in the design of the tables are a little sparse.

● GRAPHICS AND SOUND

Sound comprises a forgettable backing tune and spot effects that can be written off as unbearable. Only half the screen is used at any one time, though the actual visual designs are very competent. The flow of the ball is also somewhat suspect, with collision detection on the flippers failing from time to time.

● OTHER VERSIONS

The Amiga version, as yet unseen, will undoubtedly leave the ST version miles behind in the sound department – it couldn't be any worse.

● EXPRESS VERDICT

Pinball is a game which would seem to lend itself ideally to conversion on computers – a little imagination and compulsive gameplay would go a long way. *Time Scanner* has neither. For the price of this game you could go down an arcade and play the real thing a hundred times.



Andy Storer

CLASSIC INVADERS

SUPERNOVA SOFTWARE

Amiga • £14.95dk
Also on PC, ST

Tommy Docherty had a job. People were actually buying Abba and Sex Pistols records. British streets were full of royalists celebrating the Queen's Jubilee and *Swap Shop* was torturing a young generation of TV freaks. 'Twas 1977 – the year *Space Invaders* arrived.

Supernova Software, presumably in an attempt to rekindle the spirit of '77, has unleashed an *Invaders* clone onto a reluctant world of Amiga owners.

SILKWORM

VIRGIN GAMES

Amiga £19.99dk
Also on Spectrum, C64, CPC, ST

Silkworm is a coin-op conversion of a less than well known horizontally-scrolling shoot-'em-up from Tecmo.

GREAT FUN

● GAMEPLAY

One or simultaneous two-player action as you and a friend take control of a helicopter and jeep through hostile landscapes filled with enemy helicopters, mobile missile launchers, gun emplacements, mines, droids, missile emplacements and giant attack helicopters, to name but a few.

● GRAPHICS AND SOUND

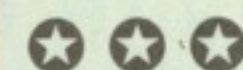
Visuals are pleasing enough, the sprites are finely detailed and the backdrops are picturesque. *Silkworm* scores most highly in the audio department, with some of the clearest sound sampled spot-effects we've heard in any Amiga game. The Euro-pop soundtrack is a little unoriginal though.

● OTHER VERSIONS

We've played the other versions in varying stages of completion, and they all seem competent enough. Look out for updates shortly.

● EXPRESS VERDICT

Silkworm isn't original or particularly stunning – it's just great fun to play.



Rik Haynes



• Up against the end-of-level guardian



• Desolation in the desert



• Night falls, and the action goes on...



• All tanked up and ready to go

● GAMEPLAY

The number of computer owners who don't know how to play this must be as insignificant as the number of people bonkers enough to fork out £15 for such nonsense.

● GRAPHICS AND SOUND

There's something distinctly wrong with launching an *Invaders* clone in 1989, but to actually produce a bad rendition should be made a criminal offence.

Classic Invaders is slow and has even less character than the original. The sound is enough to drive a good man insane. To pick out each individual fault would be crass – suffice to say that this is not a good game.

● OTHER VERSIONS

PC, PCW and ST. It would be a surprise indeed if any of these are worth the asking price.

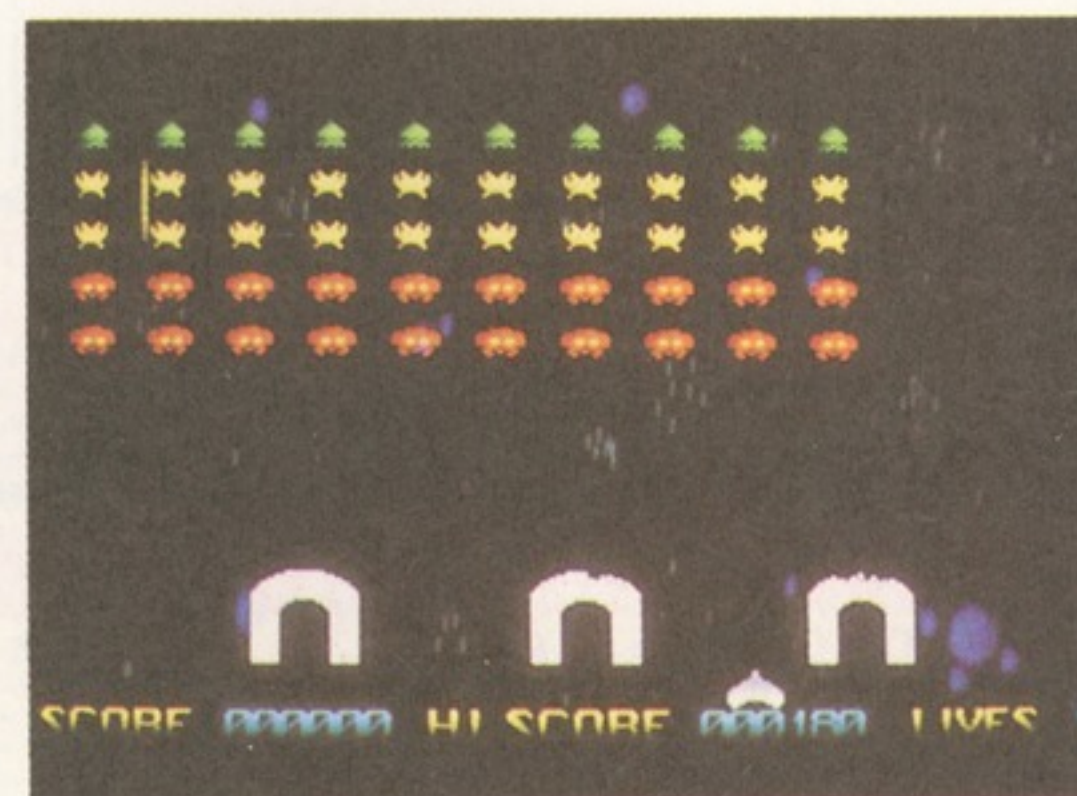
● EXPRESS VERDICT

Utter rubbish! There are infinitely better *Invaders* games floating around in the Public Domain (such as Amiga

Invaders) and about a billion better ways of spending £15. Simply appalling.



Colin Campbell



• Classic? You must be joking...

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Beyond our Ken

Ken Mosley, the man who calls a spade a trump

Spies the limit

After revelations that the Red Menace is infiltrating British computer shows, we see that *Electron User* magazine was approached by the Russkie Institute of Scientific Information asking for information. And publishers Database actually obliged!

No I'm no anti-Communist, but if we indulge in this sort of cheap publicity-grabbing toadying to the Evil Empire, who knows where it will all end. Send them a few pokes for BBC BASIC and let them get away from shows with a carrier bag full of Spectrum cassettes one minute, and the next, Boris will be guiding computer-controlled missiles along Oxford Street. It's time someone put their foot down.

Power of advertising

I cannot believe the advert for this new games label 'Microstatus'. The software, says the ad, is 'as smart and intelligent as those who choose to play it.'



Smart? The lad gets his clothes from Oxfam and has walked out the optician's with his test frames on. Intelligent? When his 1925 Model T breaks down on the M25 and the AA bloke says he doesn't even know a man who can, don't come crying to me. No wonder his bit of skirt – though of course she's wearing men's trousers, as you're not allowed to look like a woman and have a job these days – is looking so stoney-faced. Why couldn't her pillock of a boyfriend have a sensible car like a Fiesta or a Sierra? But no, he has to go for the image, which means he believes that if he smokes a pipe and wears a scarf even in mid-summer people will think he's a stockbroker or analyst. In fact, of course, they just think he's an overpaid limp-wristed Southern soft-lifer.

Now I'm no inverse snob but as a Northern lad it makes me puke to see 'status' measured in terms of material possessions. My Dad smoked a pipe, had a Model T and an ugly stoney-faced woman but he was never on any adverts.

Just shows the bias against Northerners is stronger than ever.

Beat the pirates

There seems to be a lot of talk about copy protection lately, whether it's right or wrong etc.

Quite clearly everyone is missing the point. Look at Iran; steal a loaf of bread there and it's off with the right hand. Not much crime there eh! Say what you like about Islam but it certainly gets people into line. Now I'm not necessarily advocating sharia-style laws, but if you really want to stamp out this insidious evil of software theft you must be firm. I'm all behind FAST. Police should be able to search suspect houses without warrants, hold suspects for 24 hours while their software is checked out and the guilty imprisoned for up to five years.

Crime does pay

On a similar note, I see that City firms are not shopping hackers who've stolen money from them in return for letting them go.

While not wishing to encourage blatant criminal activity such as this I can't help feeling that some firms have got their just desserts. We all know the sort of insider trading that City people do to line their own pockets at the expense of the rest of the country. It was only ten years ago that banks stopped charging you for having your money!

In paying the criminals off like this they're only storing up trouble for themselves – I mean, if someone nicked your computer and you paid them for doing it you wouldn't be surprised if they did it again. No, they're paying the price for not putting their trust in the security forces. If only they'd gone straight to the police in the first place they'd be alright.

A rumour is abroad

Now we're being told that British computer graduates are being taken by foreign companies. I can't help saying I told you so here. Back in 1965, when my brother Ron emigrated to Australia in the Brain Drain to be a Car Park Attendant in Sydney, I wrote to the *Yorkshire Post* saying something should be done. Was it? Was it heck!

It's quite clear why people are leaving. It's because this once-great Empire is going down the chute. We return our colonies to the Chinese, we fritter away our North Sea Oil revenue on keeping the unemployed, and we don't pay the cream of our universities nearly enough. No surprise they're off on the first Virgin flight to Disneyland as soon as the grant runs out.

We ought to do it more like the States – make 'em all pay for their years at university, like everywhere else, and use that money to pay them more when they start work.

NEXT WEEK

Aaaaaaarghhhh!

What to do when things go wrong! The Express guide to getting your computer repaired

Satellite City

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CGI

New hardware for the Commodore!

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The FastRAM card that every Amiga owner will eventually come to – why limit yourself to only two megabytes per slot? 8-UP! will take you all the way to the top of the auto-configuration memory space of EIGHT MEGABYTES! 8-UP! is available in two versions, the standard DIP model accepts 2,4,6 or 8 megabytes of 1 meg DRAMS. For maximum flexibility there is the SIMM version which lets you custom configure with mixed 256k and 1 meg SIMM modules, including MicroBotics exclusive PopSIMMs. 8-UP! is a power-efficient, zero wait state, autoconfiguring design. "The latest and greatest" (Amiga World, Jan. 1989). 8-UP! is available now.

Suggested List Price: £124.95

MouseTime

The easiest to use, most cost-effective implementation of a battery backed clock for the A1000. Passes the port through for joysticks or other devices. Complete with WorkBench software. Available now.

Suggested List Price: £22.95

For the
Amiga 500...

M501 Memory + Clock

Half a Meg at a Great Price!

As we are all coming to realise, a one megabyte Amiga (at least) is a necessity not an option. When you add the inboard 512k memory and clock module to your A500 make sure it's a MicroBotics M501. Note that just like the Commodore and unlike some third party expansions, we use a long lived rechargeable NiCad battery—which you'll never have to replace. Set the MicroBotics clock using the same WorkBench software as you would use for the Commodore clock. What's the difference? You get to keep £25 compared to the Commodore version. The M501 is available now.

Suggested List Price: £124.95

StarBoard2/500

Two Megs PLUS a Choice of Modules.

The premier memory expansion for the A1000 is now available on the A500. In its own case with an independent power supply strong enough to handle StarBoard2 and a second A1000 style StarBoard2, all the power and flexibility of this great expansion device is available to you. Up to 2 megabytes of autoconfiguring, zero wait state FastRAM, MultiFunction or SCSI module capability for math chip or fast SCSI hard disk interfacing. StarBoard2 also has an LED diagnostic/confidence light to indicate the power-up state of your Amiga and expansion. An A1000 style StarBoard2 can be connected to the bus pass-up for a total of FOUR megs and two modules. "The best ..." (Amiga World, Jan. 88).

Suggested List Price: £224.95

**MicroBotics, Inc.**
OASIS

For the
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The Expansion of Choice

The superb memory expansion for the Amiga 1000, still going strong! Up to 2 megabytes of autoconfiguring, zero wait state, FastRAM in a sleek, all steel Amiga coloured case plus the capability to accept either of the two daughterboard modules, the original MultiFunction Module or the new SCSI Module. StarBoard2 is powered by the bus (up to two StarBoard2's can be supported by the A1000) and passes it on.

Suggested List Price: £224.95

MultiFunction Module

High Tech at Low Cost

This daughterboard installs on any StarBoard2. It features a socket and software for the 68881 Math Chip as an I/O device (MicroBotics pioneered this approach on the Amiga—now directly supported in the maths libraries of AmigaDOS 1.3). StickyDisk gives you the most "bullet-proof" rebootable RAM disk – its hardware protection turns it into a solid state, superfast disk. Parity checking of StarBoard2 RAM can be enabled when extra parity ram is installed. Finally, the MultiFunction Module carries an easy to use battery-backed clock to set the system time on startup.

Suggested List Price: £65

StarDrive SCSI Module

Fast, Low Cost SCSI Module

When installed in any model StarBoard2, StarDrive offers you cost effective, pseudo-DMA access to SCSI hard drives and other devices. Fast, easy to install including driver software and disk diagnostics. StarDrive also includes a battery backed clock to set system time on startup.

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DON'T!



Express repair guide saves your sanity

• What to do • Where to go • What it costs - page 8

R.I.P. ST



LONG LIVE THE STE

page 2

WIN!

- An EPSON Printer
- PC Virus busters

page 24

A WALK ON THE DARKSIDE



Freescape arrives on 16-bit

SAVE A MASSIVE

£10

EXPRESS VOUCHERS

page 43

ALSO INSIDE EXPRESS

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SECTIONS FOR Amiga • Atari ST • PC • PCW • Spectrum • CPC • C64 • QL • BBC • MSX • Archimedes

BLAST OFF!

Atari's amazing enhanced ST to smash through at £399

Atari is planning to phase out the current 520 STTW – and replace it with a remarkable enhanced model later this year with a specification better than that of its rival the Commodore Amiga.

The new improved ST will still be priced at £399 and should be bundled with the current line up of 20 top games as well as a music package. It will be called the Atari STE (E for enhanced). Atari is refusing to talk about its future plans but it is understood that the STE will replace the current configuration later this year and with the minimum of fuss.

The Atari STE will boast an Amiga-beating graphics configuration of 4,096 colours of which 256 can be displayed at once. The current ST has only 512 colours displaying 16 at a time. And whilst the Amiga also has 4096 colours it can only display a standard 32 at once.

The ST will be brought up to the Amiga's high sound standards with four channel stereo with frequency and amplitude modulator. ST buyers can also look forward to extremely rapid multi-directional hardware scrolling which will free valuable



processor time, thus speeding up the machine's performance.

Otherwise, the STE will look much the same as the present machine and will still run at 8MHz with a 68000 processor.

It is understood that developers' modes are on their way to software houses at the moment. Programmers will be writing normal ST code on the top side of ST disks with additional graphics and sound on the bottom half. Software will therefore be completely compatible with both STs but will be able to exploit the new computer's superior capabilities.

An Atari spokesman confined himself to saying: "There are always plans to upgrade the quality of our machines but we have no plans to make any announcements as yet. You can speculate as much as you like."

All the same, a high-ranking Atari official confirmed that the STE will be in circulation by the end of this year providing everything goes to plan.

Commodore will not allow Atari to advert it with this thrusting development. It too is said to be putting together a mysterious new deal for potential Amiga owners.

You can catch a full run-down on Atari's multiracious plans in issue 1 of our sister paper *S.T. Format* on sale July 20th. ■

Sinclair's speedy chip

Barrier-breaking brainbox Sir Clive Sinclair is close to announcing a new chip capable of incredible speeds.

The chip, designed by scientists at Sinclair Research, is based on RISC technology and is capable of a blistering 250 MIPS (millions of instructions per second). Compare this to Acorn's speedy Archimedes which runs a RISC chip but can only manage four MIPS.

Sir Clive is refusing to talk about the details of his new chip, dubbed the PDC-1 processor. It is thought likely that it will be used in low-cost graphics workstations.

First glimpses of his plans

were outlined in TV documentary *Horizon* last week. That program set out to look at Sinclair's work over the past twenty years. ■

• **Taking RISCs in new areas:** Sir Clive Sinclair to announce new chip



• **ST among equals:** But will the STE beat the Atari ST, and everything else?

A load of balls

Computer tennis has come an awful long way since the days of *Pong*.

The latest sensation is called *Passing Shot* and will be coming to you via Imageworks. Licensed from Sega in Japan, the coin-op offers impressive graphics, lots of options and original gameplay. Tennis fans can play matches all over the world on grass or clay and can pull off all the places, lobes and aces they fancy.

Imageworks programmers are currently beating away on conversions which will arrive in the autumn on most major formats. ■

• **The latest racket:** I say, anyone for tennis?



HOME SHOPPING BY COMPUTER ARRIVES

A scheme to provide three million British homes with free computer terminals for home shopping is nearing reality.

A powerful consortium of 20 big name high street stores, mail order outfits, banks and bookies have backed the project which could be home computing's biggest step forward yet.

The Keyline project plans to install 500,000 of the computers over an eight-month period starting next year. Anyone who applies for the Keyline terminal will simply have to link it up to their telephone line.

They will then be able to shop from home and will be able to choose from the likes of Littlewoods, Asda, Gateway and Mothercare. They will also be able to indulge in home banking through NatWest and Midland. Partners will also be able to bet from home through giants Ladbrooke and William Hill.

Any products ordered will be delivered



● Keyline headline: Will British buyers be convinced?

to their home. People wanting to join in will only have to pay a £35 deposit for the single terminal. The companies involved will pay 15p to 25p every time someone uses their service.

Keyline has been masterminded by computing pioneer Christopher Curry who founded Acorn and designed the

BBC micro. He has spent the past seven years planning the 'next revolution in home computing'.

The machine itself only costs £40 to manufacture. It has a small screen and runs on batteries. Orders can be typed in normal English.

The companies backing the scheme are extremely interested because it puts their products in people's homes. Purchases can be made on the spot and without bother.

Curry reckons his idea is 'a 95 per cent certainty'. He told Express: 'It's a complete myth that people enjoy their standard shopping. I think it's far tedious to suggest that most shopping will be done like this in the future though a lot of people will do all their regular shopping on computers.'

An advertising campaign will kick off later this year with people being offered the system on a first come first serve basis. ■

Opus and the clutter basher

Computer owners are generally a messy lot, leaving important manuals and software all over the place.

But prospective PC buyers who like to keep everything nice and tidy might be interested in a new offer from Opus.

The British firm is giving away a 'smart' desk and swivel chair with every one of its 286 PCs.

The 'System Solver' desk is designed to carry a computer and all the bits and

bits that go with it. Inside is a built in lockable disk box and tidy tray. Opus reckons buyers will appreciate being able to keep everything on a super neat desktop. The 286 costs £1199 with the freebie furniture worth £200.

A most sincere Opus spokesman said: 'I wish I'd been given a desk with my PC. For the moment it's on a tatty wooden surface with manuals all over the



● Cleaning up Opus' System Solver place. ■

Micro will beat Big Brother - Reagan

Former US president Ronald Reagan last week predicted that technology and the microchip will bring down big brother states.

Speaking in London's Guild hall, he said that advances in communications technology would be the greatest weapon against repressive 'big brother' governments.

'The Golath of totalitarian control will rapidly be brought down by the David of the microchip,' he said. 'The biggest of big brothers is increasingly helpless against communications technology. Information is the oxygen of the new age.'



● Ich bin ein Programmer: Reagan calls for freedom through technology

'All this technology has breathtaking consequences for freedom.'

Reagan went on to say that the Iron Curtain is 'like lace' against the flow of information through technological means. He spoke of totalitarian states fearing freedom of information most of all, but said that they are powerless against even small computers.

Reagan also called for more computers, photocopiers and fax machines to be sent to the Soviet Union where ordinary people are allowed access to them. There is currently a limit on how much technical knowhow can be exported to communist countries. ■

Must try harder! Teachers still don't understand computers

Despite the increasingly important role of computers in schools, our teachers are still not being trained properly in new technology, says a new report.

A study set up by education secretary Kenneth Baker has found inadequate resources in Britain's teacher training colleges. Janet Trotter, head of the working group involved - and a principal herself - said: 'We were greatly disturbed by the patchiness evident in all dimensions of information technology provision.'

She pointed out that the capability of staff to handle computers leaves a lot to be desired.

Trotter has urged Baker to look carefully at the situation and to pour some resources into the colleges. One idea is for the teacher training centres to forge links with industry involved in information technology.

The Government has already accepted the request that all teachers should undergo computer training. ■

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COMMENT

Talking shop?

The idea of shopping from home has been around many years, but is yet another sci-fi idea that is apparently about to become a reality: a supermarket in your front room.

For those who find huddling to the supermarket difficult or impossible – the elderly and disabled, single parent families – it will be a boon, though this raises the question of computer literacy. For many elderly the burden of ordering the weekly groceries will fall on the home help. In any case it must require no familiarity with computers or machines to take advantage of the system: the level of difficulty of a cashpoint is as far as it can go.

Questions that must be answered are: what sort of passwords can a user put on a system – to stop young Luke and Sophie ordering cigarettes and cases of lager? What will the supermarkets charge to deliver your weekly shopping? Will details of your purchases be available for inspection by companies putting together mail order lists? The companies involved in the scheme are too responsible and have too much to lose to avoid addressing these problems.

One thing the system certainly will not do is end shopping as we know it. It sounds a dream not to have to trudge down to the supermarket every week to get essentially the same anti-stretching bags of groceries, and the cost of the system would certainly work out cheaper than the petrol or bus fares.

Town centres won't be deserted. They'll be fuller than ever, as shoppers have more time to browse round bookshops, records, clothes, computers and other leisure goods.

As ever, new technology will not particularly save time or money. It will, however, take out most of the drudgery, and make life just that little bit less of a hassle.

Snippets

● **Crash! Atari technical whizz Les Player is to appear at the Atari Computer Show this weekend to answer all your Atari questions. For every one he and his panel of pals get wrong some money goes to charity. Details: The West Hall, Ally Pally on June 23rd.**

● **On the subject of computer shows it comes to our attention that the "First Storefront" show is heading for a sell-out success". Apparently some 30 exhibitors from Wales and the Midlands will be showing up at the Music Hall from September 2nd to 2nd. More on 0743 231172.**

● **Yet another PC286 has dipped in price. This time it's Zenith's Z286/LP which goes down from £1995 to £1795. Buyers will also be treated to a choice of VGA compatible monitors.**

● **Scuttling out from Pink Software is a brand new mouse called Turbosmouse. It costs £49. And, er, that's it.**

● **Recent reports of hacking in the City where defrauders are set off in return for spilling the beans on how they did it, could be costing companies up to 2.5bn a year.**

● **Having problems with your \$77 Go along to the Atari Show this Friday and meet Les Player, Atari's former technical boss. He'll be leading a panel of tech-tippers.**

NEW DEAL FOR A3000 BUYERS

Computer lovers salivating over Acorn's new A3000 are to be given the chance to buy the machine at 0% finance.

The machine appears to have caught everyone's imagination but is out of many people's reach precisely. However, visitors to next month's BBC Acorn User Show will be able to pick the machine up and take it home for a mere £52.50 downpayment.

Buyers will then have to pay the rest off once a month over the next year. The BBC A3000 costs £549 plus VAT.

It's a great deal for people coming to the show and seeing this machine for the first time. They can have a good look at it and take it home straight away," offered a show spokesman. The Acorn stand will be linked up to Mercantile Credit's database to make sure potential purchasers are koster.

The show runs from 21st to 23rd July at Alexandra Palace in London. Acorn must reckon on shifting big numbers of its new baby with some 18,000



● **Theory of Archimedes: Buy now, pay later**

visitors expected. Most of those will be waiting to get their first glimpse of the new A3000.

Express readers will be able to see as Archimedes A3000 and monitor in the competition in issue 35.ii

Back to the future

A display of computing is to be set up at the Bethnal Green Museum of Childhood.

The display hopes to cover as many aspects of home and education computing as possible. The museum, a branch of the Victoria and Albert, has one of the world's largest collections of children's artefacts and toys, but now they recognise the need to cover computers.

Computer company Network is currently on the look out for as many computable bits and pieces as possible for kids to look at. The Computer dungeon workshop will be run at the museum every afternoon throughout August.ii



● **Wide eyed: Kids at the Bethnal Green museum**

Coders in car crash

Three top programmers were involved in a nasty car crash whilst returning home from working at Code Masters recently.

Peter Williams, Chris Graham and Gave Reaburn were driving home from their offices in Southern when the car spun off the road and hit a hedge. Graham was on the

critical list but is understood to be recovering quickly. Williams and Reaburn received lesser injuries.

The three, all under 22 years of age, are highly regarded at Code Masters and have worked on such projects as Rock Star, Four Soccer Sims and Super Stormtroop.ii

Sounds good

Sound-starved \$70sters will soon have access to all the sampled noises they require thanks to publisher Mandarin.

A whole library of sampled sounds will be available on Public Domain disks including the revving up of a car, a drilling machine in full flow and sundry other bleeps, boings, booms and bangs. Now the thousands of budding games designers can graft in all the sonic effects they desire. Further details from Mandarin on 0625 878888.ii



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DISABLED INTERFACE SPREADS ITS MAGIC

A remarkable gadget which enables disabled people to interface with an Apple Mac is to be converted to the PC and Atari ST.

Merseyside-based Bit 32 wants to bring the innovative gadget over to more mainstream machines. It enables tetraplegics to utilise a computer in the same way as able-bodied users by simulating the action of a mouse.

Essentially it works by blowing and sucking and moving the head around in a special 'box of tricks'. The impulses these movements generate are transmitted to a special mouse. Typing is done through an on-screen pointer controlled keyboard.

Much of the gadgetry works on the Doppler effect. That describes the changes in pitch made by, for instance,

an ambulance siren as it passes you.

Three microphones inside the headset pick up all the user's head movements. The signal is then interpreted and the mouse goes into action.

Bit 32 hopes that hundreds more tetraplegics will be able to lead professionally satisfying lives with the device. Among the disabled unemployment row stands at 76 per cent, with most the others engaged in low skilled jobs.

"Using this people can do absolute anything you or I can do on a computer. It's not terrifically difficult to use either," said Bit 32's Roy Stringer. He added that the £32,000 needed is a good investment for local councils and companies since it turns a disabled person into a skilled computer user.



• Taking the Bit between the teeth. Good news for disabled computer users

Virus wrecks poll tax chaos

Political hackers claim to have placed a virus in two Scottish computer systems in an attempt to tamper with Poll Tax records.

The specially devised virus is a self-replicating program which systematically destroys genuine poll tax records. It takes out a name every five minutes and reloads it with the name of a child or a dead person.

The virus was planted in Lothian and Tayside regional councils last March, and according to the hackers, has been destroying names every quarter of an hour since.

However, the councils concerned insist they have checked all their computer systems and have found no such virus.

The hackers reckon any attempts to 'disarm' the virus

will result in the entire system breaking down.

The poll tax is extremely unpopular north of the border. Lothian councillor Keith Simpson who is campaigning against it said: "This is not the virus, it's the antibody. The poll tax itself is the virus. We wish this computer infection well in its endeavours and hope that it has a long and productive existence."

Assembler Line

CRJ is set to launch a new Assembler—a program which converts written instructions into a form directly understandable by the computer—for the ST later this month called *Instinct*.

It costs £49.95, and is a full specification Assembler. Disassembler and De-Bugger with real-time memory editor and a suite of disk utilities. Details from CRJ, tel 01 533 2918.



Elan Design has launched a nifty professional presentation package for the Amiga. Coding 359, Elan Performer allows you to access and display graphics and animations from various sources—without all the hassle normally involved. For instance, you would be able to mix and match animations from completely different paint packages. Unfortunately, anyone interested will have to call California on 0303 415 822 8673. Let's hope a UK company ships the program over.

dBase freebie...

Registered dBase IV users are to be offered a free upgrade this autumn.

Publisher Ashton-Tate is to launch version 1.1 which, it claims, will include "significant enhancements" on previous versions. The well-known PC database package normally costs £595. As yet, no price has been announced for the upgraded version.

There are currently tens of thousands of users of the UK. We're giving the



• dBase IV: Free to upgrade

upgrade free of charge so that people can buy dBase IV and develop applications with full confidence that they will be able to upgrade to the next release," said Ashton-Tate's UK boss Paul Sloane. More info on 0628 33123.

TOP 20 Full Price GAMES

- 1 **Robocop** 1988
Spectrum, C64, CPC, ST, Amiga, Other
- 2 **Microprose Soccer** 1988/1989
Spectrum, C64, CPC, ST, Amiga
- 3 **Dragon Ninja** 1988
Spectrum, C64, CPC, ST, Amiga
- 4 **Forgotten Worlds** 1988
Spectrum, C64, CPC, ST, Amiga
- 5 **Emlyn Hughes** 1988/1989
Spectrum, C64, CPC
- 6 **Running Man** 1988/1989
Spectrum, C64, CPC, ST, Amiga
- 7 **Run the Gauntlet** 1988
Spectrum, C64, CPC, ST, Amiga
- 8 **Populous** 1987/1988
ST, Amiga
- 9 **Silkworm** 1988
Amiga, C64, CPC, ST, Amiga
- 10 **Kick Off** 1988
C64, ST, Amiga
- 11 **Dalglish's Soccer** 1988/1989
Spectrum, C64, CPC
- 12 **In Crowd** 1988
Spectrum, C64, CPC
- 13 **Football Manager 2** 1988/1989
Spectrum, C64, CPC, ST, Amiga, Other
- 14 **Crazy Cars II** 1988
Spectrum, CPC, ST, Amiga
- 15 **3D Pool** 1988/1989
Amiga, C64, CPC, ST
- 16 **Arcade Muscle** 1988/1989
Spectrum, C64, CPC
- 17 **Operation Wolf** 1988
Spectrum, C64, CPC, ST, Amiga
- 18 **Renegade 3** 1988/1989
Spectrum, C64, CPC
- 19 **Middle Earth** 1988/1989
Spectrum, C64, CPC, ST, Amiga, Other
- 20 **FM Expansion Kit** 1988/1989
Spectrum, C64, CPC, ST, Amiga, Other

TOP TEN Budget Games

- 1 **Enduro Racer** 1988
Spectrum, C64, CPC, ST, Amiga, Other
- 2 **Fast Food** 1988
Spectrum, C64, CPC
- 3 **Road Runner** 1988
Spectrum, C64, CPC, ST
- 4 **1942** 1988
Spectrum, C64, CPC, Other
- 5 **Arcade Flight Sim** 1988/1989
Spectrum, C64, CPC
- 6 **Shanghai Warriors** 1988/1989
Spectrum, C64, CPC
- 7 **Daley Thompson Dec** 1988
Spectrum, C64, CPC, Other
- 8 **Treasure Island** 1988/1989
Spectrum, C64, CPC
- 9 **Turbo Esprit** 1988
Spectrum, C64, CPC
- 10 **Rambo** 1988/1989
Spectrum, C64, CPC

1988 10-1989: 116 new entries. Last week's positions: 1. The charts shown are based on the Open Market, that is retailers who stock a broad range of products. All other charts are copyright of Gallup.

Atari's final show?

A total of fifty new products are to be launched at the Atari Computer Show at the Alexandra Palace on Friday, June 23rd. Possibly the most revolutionary, and certainly the most controversial, will be H&M's Spectra 128, the £199 Mac emulator reviewed in Express issue 24. Also worth a look will be Both Computer Shack's Twenty Board - a £50 add-on which pro-

vides the ST with stereo sound. Signa Publishing will also be featuring heavily - their Imagix movie show creator might interface quite nicely with Digita's £199 Multigrip joystick device. Along with seminars and workshops for DTP, programming and music, the event might be the last. It's likely to be replaced by the new all-formats Computer Shopper Show this time.

Chain store masterplan

Flagging independent software retail chain Software Plus is coming to a town near you in the near future.

The 18 strong chain from the South East is expanding into the West country in the next few months with the opening of six new stores in such places as Weston-Super-Mare

and Bristol. Easy Software Plus boss Nick Yates expects to have 30 shops up and running before the peak Christmas period.

Each outlet will games software and peripherals for all the major micros. His efforts were rewarded with the accolade 'Retailer of the Year 1988' by trade mag CTN.

Magnetic attraction

Award-winning adventure-writing company Magnetic Scrolls is currently working on a new adventure game which it predicts will take the genre a step further.

Mag Scrolls boss Anita Sinclair

told Express that "the new project will be just as big a leap in adventure gaming as The Pawn was back in 1985".

The as yet unnamed project should be finished sometime in the Autumn.

APRICOT'S 486 WORLD FIRST

British hardware manufacturer Apricot have produced the world's first 486 PC, the X00T Server.

Based on Intel's 80486 chip, the tower system will be available in September, with desktop versions due early next year. With on-board RAM of up to 36Mb, the system can address a hard disk of 1047Mb and up to five additional drives allowing a maximum storage capacity of 5Gb (5,000,000K). Backup is provided by DAT (digital audio tape) tape capable of holding 1.2Tb.

Appealing to Networking and Unix users, the Server currently runs at 25MHz, but Intel have promised parts to run at up to 50MHz leaving the current top end standard of the 33MHz 386 standing.

The new 486 machine has its own floating point maths unit built in, and for price perfor-



• Intel's 486: Taking computing into the next decade

mance compares very well with its workstation rivals.

The top-end 1GB disk/16Mb RAM supporting up to 64 power users, will rush you £22,000.

still some £14,000 cheaper than a similar 386-based Compaq configuration.

For those interested, Apricot are on 021 456 1234.



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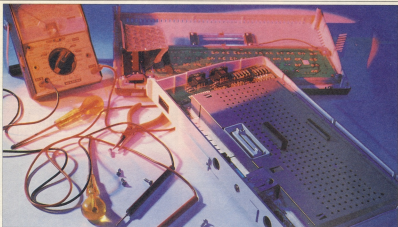
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EMERGENCY SURGERY

Computers are like any other machine: they sometimes break down, always at the worst possible moment, always unexpectedly – but not always beyond repair. Jerry Glenwright looks at what to do when your machine goes wrong...

Where to go

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- **Electronic Services, 176 Victoria Road West, Cleeveleys, Blackpool FY5 3NE.** Tel. 0253 822708. Electronic Services stocks a complete range of spares for the Spectrum computer and offers a repair service for the fixed price of just £9.99 plus parts and return carriage.
- **Commodore 64:** Video Vault LTD, Old Kingsmead School, Railway Street, Hadfield,

Cheshire SK14 8AA. Tel. 04574 66555/69499. To make use of Video Vault's repair service, just send your broken C64 and a cheque or PO for the inclusive price of £35 to the address above or take your machine along to them for a one hour while-you-wait repair.

W.T.S. (address as for Spectrum). Complete repair for the inclusive price of £22.

- **Amstrad PCW:** Isenstein Computer Systems, Unit W11, Chester Enterprise Centre, Hoole Bridge, Chester CH2 3NE. Tel. 0244 822768. Isenstein can supply all PCW spares from main system boards to the smallest capacitor. They also offer inclusive price repairs e.g. Keyboards £15, Printer £15, Monitor £30.
- **Amstrad CPC464/464/6128:** VSE Technical Services, Unit 4, 8 Nursery Road, London

SW9 8BP. Tel 01 737 0234. VSE repairs the 464/664 for an inclusive price of £21.50 and the 6128 for 24.50 which include a 4 months guarantee and all parts, labour, return carriage etc.

- **BBC/Electron:** WTS Electronics, Studio Master House, Chaulende Lane, Luton, Beds LU4 8EZ. Tel. 0582 491949. You can have your Beeb repaired for an all-in price of £38 and the Electron put back together for £29. Repairs include a three month warranty, parts, labour and VAT.
- **Commodore Amiga:** Commodore Business Machines, The Switchback, Gardiner Road, Maidenhead, Berkshire. Tel. 0628 770088.

● **Commodore Amiga:** Commodore Business Machines, The Switchback, Gardiner Road, Maidenhead, Berkshire. Tel. 0628 770088.

- **Atari ST:** Atari UK, Railway Terrace, Slough, Berks. Tel. 0735 33344.

It might come with a flash of sparks – or with a blank and lifeless screen. Your pride and joy has just taken a nose dive into the silicon graveyard. The ideal solution is to buy a new machine, maybe upgrade to something better. However, if – like most of us – you simply can't afford to, you'll have to think about having your machine repaired.

The first step on the road to repair is to determine whether your computer is still under its original guarantee. If so, then a phone call to the manufacturer to obtain a return number is all that's needed. Parcel the machine safely – the Post Office isn't renowned for delicate handling – mark it as fragile, take out postal insurance and send it off. You should have the computer back within a couple of weeks as good as new. The legal position is quite clear – unless the problem is due to excessive wear and tear, anything that goes wrong should be put right for you.

Some manufacturers allow you to 'renew' your guarantee by paying a small fee, others automatically provide a new guarantee for the work carried out.

Bin and gone

If the guarantee is that bit of paper which went into the dustbin five years ago, then you're going to have to find a company with sufficient stocks of spares willing to carry out the work for a reasonable sum.

Due to the Sinclair habit of sending out new replacement machines to owners of Spectrums, ZX81s and the like, that had arrived intact but

non-working, there are lots of spares around for these machines. Both the Spectrum and the ZX81 used standard technology such as the 230 CPU and its support components, all of which were incredibly popular a few years ago. For instance, you can buy a 230 chip for just £2.99. Similar parts such as the ROMs, main PCB (Printed Circuit Board) for the an-in-1, TV modulator etc. are all readily available at little cost.

Consequently, there are now companies providing repairs for the humble Spectrum than for all the other (home) machines put together.

Typically, repair companies offer an 'all in one' price which covers anything that may be wrong with the machine. You simply send off your Spectrum with a description of the problem and it's returned 14 days later as good as new for around £10 to £15.

You could of course attempt the repairs yourself, but without the necessary test equipment such as a logic probe, oscilloscope, and multimeter it would be difficult for you to locate faults with chips and discrete components. If the fault lies with the keyboard then it is possible to repair this without the need for costly tools. A keyboard assembler will cost you anything from £5 to £10, sometimes cost around a fiver and the keyboard mat about £6.

All these bits are easy to install providing you take your time and use a little common sense. You'll need small crosshead and flat blade screwdrivers, long-nose pliers and perhaps a pair of tweezers.

The Commodore 64 was, along with the Spectrum, one of the most popular home machines ever made and like the Spectrum, there are a lot of repair centres around the country.

The C64 commands a significantly higher repair price over the Spectrum, but at least there are people still carrying out the repairs. Typically, charges will be around £30 fully inclusive.

Dying PCW

Probably today's most popular 8-bit machine must be Amstrad's PCW range of machines. Although well made and reliable the computer does occasionally go sick, but how not! PCW parts are readily available from a number of outlets for reasonable prices or you can elect to have your computer repaired for a fixed sum of which you will be notified before the repair is carried out.

It is a fairly straightforward task to take apart a PCW, although because the disk drives are housed in the monitor case it's sometimes a little difficult to find enough clearance for a screwdriver, so nimble fingers and watchmaker's screwdrivers will win here.

Amstrad's other 8-bits - the CPC664/684/1210 also have support centres providing comprehensive repairs for an all-in price of around twenty pounds. You can also try spare parts separately at minimal cost but, as with the Spectrum, unless you are suitably equipped, component repairs are a little difficult.

As for the other 8-bit machines such as the BBC, Electron, Dragon etc. there are companies willing to repair these machines. They're usually a little more expensive than the mainstream computers, but then it's cheaper than buying a new machine.

What about the Amiga and ST? They're very popular machines, so surely there must be lots of companies ready and willing to repair them? Take a look through the classifieds of any computer mag - no-one!

The best thing to do with these machines is to contact Atari and Commodore directly, who will be able to give you the address of your local officially-appointed service centre.

How safe are you?

Just how reliable is your micro? Well, if your machine makes it through the first week it should last several years. Chips have a 'burn-in' period of a few days, once over that, they should work practically indefinitely.

One common problem reported by computer



It might come with a flash of sparks - or with a blank and lifeless screen. Your pride and joy has just taken a nose dive into the silicon graveyard.

repairers is machines that have blown because things have been plugged in and out while it's switched on. As a general rule, never plug in or unplug a joystick interface or printer while the machine is switched on - the power surge caused can blow your machine, and it'll cost you to get the thing repaired.

Most micros are, of course, perfectly reliable and will give you several years' faithful service. But read on to find out the Achilles Heels of your machines.

● **PCG.** Generally reliable. The thing most likely to go is its hard disk - most of the cheaper ones only have a designed life of about two years.

Tools of the trade

Carrying out your own computer repairs is feasible if you exercise care when handling delicate components, equip yourself with the necessary range of tools and get a good book which explains the basic principles of computer repair.

Tools? Well, you'll need a range of screwdrivers of both the crosshead (otherwise known as 'Phillips') and flatblade types. The best thing

is to buy a set of jewellers'/watchmakers' screwdrivers. They cost about £10 to £15 and with them you should be able to open anything even vaguely electronic. You'll also need a soldering iron. Get one which is rated between 15 and 17 watts. Anything larger will destroy delicate components. Snub and long-nose pliers are necessary, as is a mini multimeter for test purposes [available from Tandy for about

£10]. A good pair of tweezers are a boon and if you can afford it get some wire strippers and a sharp knife.

This is the (very) basic kit, which will let you get machines open and poke about inside.

The most important requirement is knowledge - without it, you'll almost certainly make things worse. The best books on computer repair are reviewed in this Express on page 14.

They're very susceptible to shock especially if moved when switched on! Power supply problems can also occur, but the most likely thing to affect your machine is wear and tear.

● **ST and Amiga** Again, pretty reliable and you won't have too many problems. (Avoid unplugging the printer on the Amiga when it's switched on, though, as this can blow one of the chips).

The most common problem is that a chip springs out of its socket, causing your machine to appear dead. Try picking it up and putting it down on the table again firmly – it can jiggle the chip back into place. Otherwise it's a simple job for the repair people to put it back for you.

Mice wear out pretty quickly but there's a simple remedy to that – buy a new one.

The ST keyboard can hang occasionally when the keyboard chip goes. It might just work again after rebooting, but possibly only for a few seconds. Again, a simple and inexpensive job for the repair people.

● **PCW** Very reliable – the main enemy is wear and tear. The keyboard is not well thought of by many and once it gets 'spongy' (a dead 'E' key gives away the writer or journalist) you're best having it repaired professionally. If the dot matrix printer pins wear out (loosening tops and bottoms of letters) you can stave off repair by altering the pressure setting knob on the right underneath the black plate at the front of the printer.

● **Spectrum** 95% of problems with the Spectrum are caused by plugging in joystick with the machine switched on. Normally this just takes out a transistor though it can cause quite a lot of damage to the memory. WTS Electronics say normally the ZTX650 has gone, a straightforward repair.

The membrane on the keyboard can also go and the connection sockets can get worn pretty quickly too by careless pulling out and plugging in.

Symptoms of a sick Speccy are crashes a couple of seconds after switching on, little flicks on the screen or colour blocks.

Failure to load a full 48K game is the sign of damaged memory chips, a minor repair. The +2 is notorious for tape deck problems, and if the keyboard goes down you'll have to get a new one. The +3 has also been known to have problems with the disk drive.

● **C64** 'Not too bad', say the engineers – but not too good either. Replacement parts for the C64 are difficult to obtain.

The most common problem is not with the computer but with the power supply. VSE Engineering's Tim Morris told us that 3 out of 10 broken C64s had been zapped by an over-exaggerated power unit. They're supposed to deliver 5V, he said, but some of the ones brought in by people with dead C64s were producing 11V – 5.7V is enough to cause damage.

If your C64 dies on you, take the power supply to a computer shop and get it checked out – it could save your C64 going again!

● **CPC** The Arnold has a good name in reliability and few common problems are reported. The main things to watch for are the 8123's disk drive and the cassette motor on the 464.

● **BBC** Reliable, say the engineers. The power supply is the most likely thing to go down. If you can't type anything at the keyboard it's probably the 8523, they say, and the memory occasionally fails. BBCs are difficult to repair as there are so many bits and pieces inside them, so it's just as well they're reliable!

Technical centres covering every kind of repair for almost all of the popular home and small business machines are dotted across the country. The repairs are usually relatively cheap and come with a guarantee. Don't consign your broken machine to the trash – have it repaired! ●

On the RAK

Unlike the repair centres servicing home computers, the IBM PC engineering world is an exclusive, highly specialised – almost elitist – industry which prospective repair companies must jump through hoops to join.

Before ever being allowed near an IBM PC, the company wishing to undertake repairs must pass several stringent tests in order to satisfy IBM of its engineering ability.

Engineers employed by the company travel to an IBM examination centre and sit several papers which – if they pass – qualifies them as Field Service Engineers.

No only are the engineers tested, but the premises are inspected and the tools and equipment checked.

If after completing and passing all these checks the company still hasn't incurred any black marks, then it is awarded the coveted (I) IBM dealership and Service Centre status, and can embark on the selling and repair of the PC.

Ironically, the IBM PC and its many compatibles are probably the easiest of all small computers to repair due to the open architecture design of the machine. Spares are also readily available so there's never the long waiting periods associated with the repair of some of the home micros.

One such IBM Service Centre is RAK Computer Services based in Norwich.

The company has been in the computer industry for many years and RAK began by selling CP/M business machines and bespoke software to local businesses in and around Norwich.

Once the IBM-PC began to attract a large business following the company invested a lot of money and effort in setting up a capable and efficient engineering department able to deal with all problems associated with the machine and its peripherals.

The engineering department boasts five full-time engineers who – whilst conversant with all aspects of computer, monitor and printer repair – are especially adept at solving arcane problems buried deep in the hardware of the PC.

After hard drives, probably the least reliable components are the expansion cards that every PC seems to have plugged into it in wild abandon.

Usually emanating from third-party peripheral manufacturers, these cards control everything from screen display, RAM expansion and real-time clocks, to network adapters and joystick



• There's a small plenitude of manuals and servicing data necessary to tackle all aspects of PC repair



• Dead printers and monitors, power supplies, cables and bits of wire – all casualties of the repair centre



• Next to disk drive problems, the peripheral adapter cards are the most likely to fail. Removing these cards is a simple matter of opening the PC's case and – unplugging the card from the expansion slots – it's then that the fun begins. Unless the faulty component is simple to locate, the card is likely to be consigned to the dustbin

connectors are usually the first to blow should anything untoward happen to the computer, such as a power surge or sharp knock.

Effecting a repair is a simple matter of opening the PC's case and unplugging each card in turn, in order to locate the defective adaptor.

Once discovered, the offending card is tested using an oscilloscope and logic probe to determine the actual problem.

Often, after locating faulty components on a card, it may be decided that the repair isn't cost effective, the card is

blinded and a replacement plugged in its place – and this happens quite often. You'd be amazed at the peripherals consigned to the trash, disk drives, RAM cards, network cards all in the bin without turning a hair!

Your PC may cost a little more to repair than the average home computer, but you can be sure that servicing will be carried out by qualified personnel using the latest equipment.

For all your computing needs, RAK can be contacted on 0603 617674.

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EXPRESS MAIL

Dear Reader

More pages packed with another selection from our postbag and Rob Ainsley's replies. Have you got something to say? Make your voice heard in computing's liveliest letters page! Send your contributions to: **Express Mail, 4 Queen Street, Bath, Avon BA1 1EJ**

PS. Sorry, we just don't have the time to give personal replies, whether you include an SAE or not. We're too busy putting Express together!

MSX MAG

Could you publish the following address in your magazine somewhere where MSX users may see it. It is simply for those still pining for a mag.

MSX PD Software have published one consisting of 20 pages of info, tips, small ads, letters and a huge selection of 3.5 inch PD disks. As of yet there are no games reviews but if you are into programming it has a complete PD catalogue and I'd recommend it. The address is:

MSX Can Mag, 396 Park Lane, Merseyside, Merseyside, L21 3NQ. Tel: (0652) 531 7497

The first issue is £3 with free quarterly updates of around the same length. Wayne Morrison, Gateshead, Tyne and Wear

● Thanks Wayne. Who said the MSX is dead, eh? (Reviews next week).

PDQ PD

I keep reading in your magazine about people who are unable to afford to buy games and software they would like.

Perhaps you could remind the readers that there is some excellent PD software available for a very reasonable price of £2 to £3 a disk. I myself subscribe to ST Club, but I am sure there are other libraries for other users. You can get languages, games, utilities, demonstrations and discounts for clubs off software. It seems a pity that people should miss out when excellent software is available. And of course, there are the classified advertisements in your mag. Janet Lord, Selby, North Yorkshire

PIDD IGNORANT?

I was interested to see your article by David Pigg on BASIC English, but I am still surprised by the lack of knowledge where the Alan 8-bits are concerned.

There are numerous guides to Alan BASIC, but three good ones are: Alan BASIC: R. Albert and others.

Alan BASIC Source Book: B. Wilkinson and others.

BASIC Reference Manual: by Alan. Rose James, Preston, Lancs

● Thanks - er, no chance of getting the

prices, ISBN numbers, publishers etc? It's difficult to order them otherwise, and in our humble experience! (bookshops do not stock 8-bit specific titles).

PATIENCE OF JOB

I thought I would reply to S. Lytle's letter (Express 31) regarding my own letter about the shortage of jobs in the computer industry.

While I welcome S. Lytle's views, what they fail to appreciate is that computer operations is a different sphere of work altogether to that of programming/ systems analysis and design - they may be rungs on the career ladder, so to speak, but it's not the same ladder! I wouldn't normally expect an operator of several years' experience to progress to a programming post or indeed for a senior programmer to become an operator.

As I suspect S. Lytle found out, operations jobs don't normally require any previous experience as an operator - except for senior positions, whereas programming posts usually ask for a relevant qualification, and experience gained in a commercial environment.

Regarding the comment about trying to start at the top, well the course I am about to finish is wholly concerned with programming/ systems analysis and design - consequently I've been applying for trainee/junior programmer vacancies which as you can see are the bottom rungs on the ladder. If I was aiming for the top I would be applying for posts as systems analyst/consultant - worthless 'handing' - rather than those above. Thank you.

Timothy Smith, Coburn Bay, Chyrd

● Perhaps your best chance of getting work is to move to the South-East of England - though how you're expected to buy a flat at £60,000 on a salary of £9,000 I don't know. Just shows how well the economy is doing.

COPY PROTECTION PT. 365

In reference to Mr. Muzzoni's letter (Express 29), have you at Express ever played *Intensity* or *Technoquest* on the Amiga? By playing these games with the write protect on and they'll both crash at a certain point. Intensity! If only doing so when one saves high scores. Many games have high score tables which must

be kept on the original disks, and are only going to be saved if the disk is write protected.

On the issue of protected software, why do the software houses bother? Anyone who really wants to copy a game will do it, for every original game I've seen a hacked copy. At times before any advertisements have appeared, Novella protection can be by-passed by ripping the game apart or someone will load it again and again and make notes of the words.

On a different subject, don't the people who do these things have anything better to do with their time, something constructive perhaps? One hardly ever sees serious software protected, and GFA BASIC on the ST is an example of how a package can survive with any protection and set too. So why must games software be protected? Ahmad Alam, Liverpool, Merseyside

● Serious software - a spreadsheet, say, or ODP package - is often unusable without the manual, but there you are! So, the theory goes, it is less vulnerable to copying.

I'm not convinced by the argument that it's pointless to protect because it'll be cracked anyway. Isn't that like saying it's pointless locking your front door because burglars will get in if they really want to, that it's pointless locking your bike up, guarding your Access card etc.

WELL BASICALLY...

While reading your review of the new Archie A3000, I found myself checking out the features which I thought impressive. Plenty of them too - the RISC processor of course, eight channel sound, mega bytes, BBC BASIC... BBC BASIC? Is that meant to be impressive? I'm not knocking BBC BASIC here, but seeing it mentioned in the

Incompleteness theorem

I am writing in answer to your request for readers views upon the practice - of some magazines - of reviewing incomplete software. It's just not right is it? I want to read about the finished product to see if it's worth buying but I don't mind reading previews of games as long as it is stated as such.

You tend to read any review with a pinch of salt anyway as people's individual opinions differ wildly and you take these into account. But to unwittingly read a review which is under the guise of the finished product can colour your opinion of the game. How often do you read conflicting reviews of one particular game and end up confused, not knowing whether to buy it or not? This can only be damaging to everyone. Long live the reviewers at Express and how they prosper.

Moving swiftly on, I pay to shop around. I was down at the Commodore show in Hammersmith the other day and I think it was one of the better shows I've been to. Although I got stung for a tenner on the way in (ES



entrance fee x 2 - I was with my wife, I soon found that prices differed greatly for both hardware and software.

For instance £199 for a Star LC 10 printer at one store and £165 at another (Megalad) plus free lead and friendly service. The Protext word processor was obtained for £65 although it was being sold elsewhere for £89 (I won't get it cheaper again).

Games varied a lot and there was, as you'd expect, a lot of competition. I had one poor bloke whose games were a bit pricey and presumably weren't shifting virtually begging with me to buy a 'head cleaning kit'. I told him I was skint and fed. He saw me later buying my printer so I hid behind my wife feeling somewhat guilty. All in all, if I'd just bought my stuff at the first place I'd seen I would be about £80 worse off.

Verdict, great show

but too hot. All my cheap stuff works perfectly too, so it is not always the case that the cheap stuff is rubbish as some people seem to think. Anyway my Repetitive Strain Injury is giving me a bit and I'll have to stop typing with my feet.

Neil Barnes, Birmingham, West Midlands

● Thanks for your support on reviewing practice - it's something we feel quite strongly about. It's very easy for a games reviewer on a magazine to recommend everything, because we get them for free or at cost! But you have to put yourself in the punter's shoes - is this game really, honestly, worth spending ten or twenty quid on? That quickly cuts down the number of games you must go and buy from a dozen a week to a dozen a year.

So, no apologies at all for making this the letter of the week as it makes as feel snug and righteous! Tell us your machine and we'll send you the finished product of a game we think really is worth the money.

review got me thinking about the use of BASIC in general, and why people seem to love BBC BASIC so much. The usual reason for liking BBC BASIC seems to be because it is highly structured, but the only thing that really matters is that it works.

I think that the majority of BASIC users see the language as a quick and easy means of knocking together programs which do not depend too heavily on speed, and while they take a bit of care, they don't particularly worry too much about the listing looks like.

I would have thought that Microsoft BASIC scores way above the BBC equivalent, as it is undoubtedly more friendly (eg nice little commands such as CIRCLE), and is fairly standardised. Before upgrading to my Amiga I used a Dragon, on which I have written several short BASIC programs. To run these on the Amiga, I simply made a 256 x 392 pixel window, copied the Dragon BASIC programs almost verbatim and they worked fine, with no fiddly little Dragon emulators.

I'd be interested to hear other readers views on the subject.

Zennan Green, Kingston, Inverness-shire

● So would I

TEN WORST THINGS ABOUT COMPUTING...

1. The inaudible 'loud' speaker in the Spectrum 48.
2. Diagonal function keys (for people with diagonal fingertips!), and nowhere to put a label, on Atari STs.
3. All the machines without a 'Yes!' button that leaves the RAM contents unchanged, so that you lose the last two hours work when the program hangs up.
4. Machines without the operating system in ROM, so that you sit around for ages waiting for them to start (or restart after a crash) - several minutes in some IBM-PC/XT cases.
5. Programs that allow you to access information, such as disk directories, but scroll it madly through a tiny window (eg AMX Superant).
6. Machines that insist on loading programs from tape all in one go, and erase the lot if the tape produces an error.
7. Disk drives that don't retract the heads when not in use, so that they corrupt disks at power up and power down.
8. That perforated bit at the left hand side of the original BBC Micro's keyboard that Acorn never did find a use for.
9. All the daisywheel printers that are enormous (and loud) despite the fact that no one ever prints anything with A4 paper with a daisywheel.
10. Lockable disk boxes that all open with the same key, and can be broken open with your bare hands anyway. John Godsmith, Bury St Edmunds, Suffolk

● Anyone else fancy sending us their ten most unfavourable things about computing?

BIAS??

Coming into the Atari ST, why does Express always seem to promote it? Have you got a contract with Atari or

something? Everyone knows as a fact that the Amiga beats the ST in everything, sound, graphics, games, etc., even ST owners with more than one brain cell admit this once they see the Amiga in action!

So why do you call the ST a good all-purpose computer, as if suggesting the Amiga isn't? Anything the ST does the Amiga does ten times better. Keith Grant... An Amiga Owner in case you hadn't guessed yet! Reading, Berks



● An Atari 8-bit in a dubin - another blatant demonstration of our anti-ST bias.

● Such an crash, perhaps? Enough has been said on the ST/Amiga debate for the time being. Suffice to say no, we're not on a contract from Atari. In fact they're always complaining about our anti-Amiga bias, which clearly demonstrated in our cover picture of an Atari 8-bit blowing up.

FROM LITTLE ACORNS - BIG PORKIES?

I, and probably many others, along with David Dyball (Express 31) have also been conned by Elite Micros. My cheque was cashed 7 days after I posted it off and the only correspondence I have had was a letter which appeared to have been written by a four year old and void of any address, saying that their computer had a virus and they would be no catalogue. If I thought it would achieve anything I would write to G Acorn of Elite Micros but I honestly believe it would be a waste of a stamp. T McLaughlin, Ely, Cambs

Dear Sir/Madam,

We are very sorry you have been conned - we have received a letter from you saying you had been conned. We are sorry to hear that. We are sorry to hear that. We are sorry to hear that.

We are very sorry you have been conned - we have received a letter from you saying you had been conned. We are sorry to hear that. We are sorry to hear that. We are sorry to hear that.

Yours faithfully,
G Acorn
Elite Micros

WHEN I'M 64

I only recently discovered your mag and am now buying it regularly. My only complaints are the small print and the fact that you haven't yet reviewed my favourite computer - the Cray 2 Turbo Laptop, with built-in ice-disk and free ice-sock (and GEM Eskimo Icons).

I gather from the tiny print and the heavy games emphasis that it's mainly for young people. So I must apologise for living it. I'm so old that I remember when Paul McCartney wrote decent songs and had taste in women!

Could you please give a free gift with each issue, like other computer mags, e.g. a cheap plastic magnifying glass and a sticker for Mac Is saying 'Amstrad PCII - Half Price'?

Neil Foster, Prescott, Merseyside

● Sorry about the small print, we're just trying to cram in as much into the magazine as we can without filling more trees. We don't aim Express specifically at any age group, just anyone with an interest in computers. All the Express staff are in their thirties.

BBC BIAS?

Why do magazines such as yourself pretend to cater for a wide range of machines, but in reality favour only one or two, with the coverage of the others' hardly worth the effort. In this respect the Beeb seems to suffer more than others. This trend seems prevalent in the four/five general mags I read from time to time, so much so that one is led to

If FAST really wish to do some long term good they must make some changes in their own industry before laying all the blame at the consumers' feet who, though not innocent, is only trying to maximise his enjoyment and utility in a major investment, the computer hardware itself.

Tan P L L, Milton Keynes, Bucks

● Budget 16-bit software is still a long way away, I think, but at least more less expensive games, as it were, are on the way.

PRESS FOR ACTION

I would like to congratulate you on the article on 'Computer Auctions' in issue 30.

Not only did I find the article very informative and well written, but it also inspired me to make my first visit to an auction.

This visit resulted in the purchase of a Brand New Amstrad DMP 3160 printer for the more than reasonable price of £30.

I find your magazine very interesting and full of useful information and helpful tips and hints. Keep up the good work. A D Baker, Basildon, Essex



● Too many magazines are biased against the BBC, reckons D E Williams

select a deliberate anti-Beeb bias.

Finally, not a bad mag for SBO - a good little read and it's a plus to find out what other people are selling floppies etc for. D E Williams, Cardiff, South Wales

● Well, we have a special column for the Beeb and always mention it in our features as I don't think you can accuse us of anti-Beeb bias. We try to cater for as many machines as possible while still retaining enough depth for each to be useful.

● Thanks. A reminder that there are auctions coming up at Bristle in July 1st (details 0527 579201 at Wensley Hempstead on July 28th (052 681 5412) and soon in Surrey (0276 882260).

AND FINALLY, ESTHER...

I've enclosed a misprint from our local free press, the Caerphilly Campaign which employs ex-Telegraph typists as I feel it has something to add to the ST/Amiga battle.

I, incidentally, own an Amiga, which doesn't even faintly resemble a Commodore! I thought it would be wasted on 'That's Life'.

Nigel Nock, Caerphilly, Mid Glam.

WANTED Commodore folding if possible, good back support for old persons. Tel: Caerphilly 8634489 anytime.

FAST WORK

The recent announcement by US Gold that some of its 16-bit products will soon be sold for around £15 is a good sign that attitudes are changing. But in the long run it is the 'cave' type collision in the setting of industry lessore software prices that must be reversed.

COR, WHAT A LOVELY REPAIR

Want to repair that old micro you've got? Or just want to fiddle around and be techie? Basil Pigg gets his soldering iron and looks at a couple of books that might help you...

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Tinkering about with something that makes our maintenance book like changing a light bulb is for real enthusiasts. And for them this book is ideal. You can't do repairs without understanding how

a computer works, and all the functions of the boards (memory maps, registers, processor routines, disk drive engineering etc.) are described in detail.

There's also a special section on repairing PCs and the processors up to the Intel 80286 are covered.

There are BASIC routines to test the various bits of your machine and comprehensive troubleshooting. It details all the tools you need and has plenty of circuit diagrams and pinouts.

There are few repair books on the market, but this is undoubtedly the best. It's detailed, comprehensive and methodical, and for the budding techie it'll tell you everything you could ever want about computer repair.

□□□□

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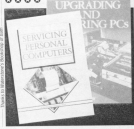
● £22.95 ● ISBN 0-88022-395-2

Mueller's book is set out in sections in that very American style which tells you what you're going to learn in this section beforehand, and what you've learned afterwards. However, it's very straightforward and easy to follow. It even starts off with a brief description of the history of computing to get you in the mood.

The book covers everything from installing another disk drive and changing hard cards up to component level repairs. Layout and explanation is perhaps clearer than the more wide-ranging Today book, though they're both very good and you wouldn't complain if you got either for your birthday.

Another good book, very comprehensive (700 pages) and well worth the money.

□□□□



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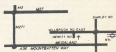
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SATELLITES

EXHIBITION

The mass transmission of electronic data has been with us since the early eighties, when the Cade and Cofea telexnet systems began to deliver an ever increasing diversity of news and information into the home.

Telexnet used the spare bandwidth, the Vertical Blanking Interval between TV frames, to store data for handset recall. VHF radio transmissions also carried a range of data from finance to machine code. Even Radio 4 got into the act – remember Barry Norman's Chip Shop of 89/4 broadcasting BBC – and – Spectra – code? Somewhat more upmarket, FM transmissions, on 57 and 68MHz, still carry City updates to desktop receivers and dedicated hand-held units.

Above and beyond

Although pioneering the principle of data broadcasting – one-way, point to multipoint communication or sending data by radio from one centre to many receivers – these early media have been superseded by the major advances in computing and communications set for the nineties.

The trend towards distributed computing, resting on large, fast intelligent networks, the sophistication of DNA and X.25 protocols, cheap bandwidths and fibre optics, is already in



• CSF's Pandata 1 receiver and satellite modem – opening your office to the airwaves?



• Gluts U-Card system – a receive-only terminal for data communications able to incorporate different satellites and antenna diameters and capable of handling up to 112Kb per second of data. Prices for this remote terminal start at £800.

BEAM ME DOWN...

Data broadcasting may be a fledgling industry, but there are big plans afoot and they include you. Andy Storer visited the recent Data Broadcast Expo, found the sky's not the limit and returned looking more dishy than usual.

evidence to some extent in the current terrestrial TV transmissions of private companies. Corporate broadcasting by hotel groups, travel agents, betting shops, chain stores and banks is now firmly entrenched.

In addition, there are some 40 subscription services available in Europe, mainly featuring the quotes, reporting and analysis that drives the world of finance, along with retail and betting. The U.K. has more traffic than the rest of Europe put together with 26,000 reception sites throughout the country.

From a company perspective, the advantages are clear – simultaneous and reliable updating of data across a wide geographical area, centralised network management and a uniform response time for all users. But the main disadvantage is the one-way nature of the medium. That and the relatively primitive data formats. After all, telexnet-style graphics, whether they're on Cofea or Microsat, hardly leave you staggering. And what about the sound? What sound?

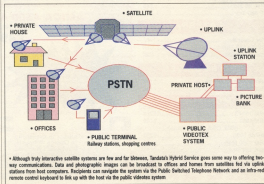
Lighting up the skies

Data Broadcast 89 was an exhibition and conference designed to address these problems by paving the way for new standards. What emerged were the first signs of terrestrial and radio data transmission giving way to satellite networks. No doubt spurred on by 1982 and the 'New European Market', these systems are designed to integrate fully interactive voice, data, fax, video conferencing and video broadcasting across networked geostationary satellites – the D-MAC standard nearly all suppliers want to see employed will allow 2Mbytes per second of data to be combined with video on a single channel. To date, 1000+

European data broadcasts are largely confined to finance and news but rest on the agenda will be training and education. Perhaps most significant of all are the plans for electronic publishing.

With the likes of Murdoch and Mamedel seemingly owning half the sky, it's only a matter of time before the broadcast newspaper hits your home. The idea being that you subscribe to the type of news you require and download the

material to your TV receiver for printout. Bearing this and buns over Europe may not seem a fitting application for hi-tech advances but it's a probability that's already provided in conventional satellite broadcasting. Hopefully, it'll only be a matter of time before tabloid transmissions have to compete with high brow. Until then, suspend your disbelief, watch the skies and stay tuned.



• Although truly interactive satellite systems are few and far between, Pandata's Hybrid Service goes some way to offering two-way communications. Data and photographic images can be broadcast to offices and homes from satellites fed via uplink stations from host computers. Recipients can navigate the system via the Public Switched Telephone Network and an infra-red remote control keyboard to link up with the host via the public videotex system.



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development tool. With the cartridge in action, you can freeze any program, use Expert's machine code monitor to examine and change anything currently in the 654's memory, and restart the program at the point you froze it. Add to this the capability to display all the sprites in memory and numerous other utilities, and you should begin to realize how useful Expert can be.

However, there was a price to pay for these superb features, namely having to wipe your program in memory if you wanted to reprogram the Expert's utilities. This is where Expert Upgrade V4 1R comes in, as it allows you to swap from one Expert function to another while keeping your current program completely intact.

Features

As well as being a completely meta-driven modular operating system, EU V4.1E also offers

numerous enhancements to the standard Expect OS software, such as option-packed real-time sprite, character and picture editors, and an improved machine code monitor with both bi-directional scrolling and function key commands, and - probably more importantly - full untested opcode support. Plus all the Expect features found below: infinite lives, sprite killer, disk utilities,

User Interface

Easy as pie to use, perhaps the most significant enhancement included in ZU V4.1R is the bidirectional scrolling in the machine code monitor - users of previous Experts will know what we mean!

Documentation

The 30-page manual may feel a tacky photocopied affair, but then again the whole package costs only a tenner.

Nevertheless, the manual incorporates all the operating procedures and technical information you'll require, and also contains a table of all the C64's 6510 opcodes, including all the unlisted ones.

Verdict

Not much to say, except that if you're a disk-owning C84 machine code programmer you must have the Expert cartridge and Upgrade V4.1K. Nothing else comes close... we just wish Expert was available for the Amiga!

★ ★ ★ ★ ★

HIGHLIGHTS

+ A MUST for all C64 coders.

CRANBERRIES

- Why wasn't it released earlier?



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MACHINE CODE (L): Instructions which are directly understandable by a computer in the form of two numbers: 0s, 0s, 4s, 3s and so on. All programs eventually get 'translated' into machine code before the computer can perform them. Contrast with **assembly language**, **high-level language**. See also **hex**.

MACHINE INDEPENDENT (T): Programs which can be run on any machine regardless of configuration. This is usually achieved using a standardised compiler or operating environment such as Unix.

MACINTOSH (C): Fast, modern microcomputer designed and marketed by Apple Computers. The machine incorporates a Motorola 68000 processor and was one of the first computers to make use of the WIMP (Windows, Icons, Mouse, Pointer) interface. The Mac, as it's affectionately known, is very popular in the USA where it was first launched, although it is gaining greater momentum in the UK due to its use in desk top publishing applications, to which it is ideally suited - fast, with a good selection of very professional packages available.



• Apple Macintosh II: Ideal DTP machine using fast Motorola 68000 processor

MAGRO (L): A single command which represents a series of individual instructions. The macro allows a programmer to gather together similar commands or those necessary for a particular task and issue them as one command. For example, to make a cup of tea you may carry out the following instructions:

1. fill kettle with water
2. switch on kettle
3. put tea bag in teapot

4. when kettle boils, pour water into teapot
 5. wait 5 minutes
 6. get cup
 7. pour tea into cup
- A simple macro which would handle all of these instructions would be: Make tea. Giving this one command would cause all the others to be performed automatically.

MAGRO ASSEMBLER (L): An assembly language assembler which allows groups of instructions to be assigned to macros. See also **macro**.

MAGNETIC DISK (T): Generic term to describe floppy and hard disks. See also **floppy disk**, **hard disk**, **magnetic tape**.

MAGNETIC SCROLLS (C): Award winning software development company responsible for a range of



• Guild of Thieves: Classic adventure software from Magnetic Scrolls

graphical adventures including The Pawn, Guild of Thieves and Fut.

MAGNETIC TAPE (T): Before the advent of floppy disks, magnetic tape - exactly as that used in domestic cassette machines - was used to store vast amounts of computer data. Although comparatively fast, tape doesn't compare to disk speeds due to the former being a sequential access device. That is, the tape is read from

beginning to end, one piece after another, until the desired data is located. The disk drive can move to anywhere on the disk that the data is stored without having to read the rest of the disk (much like a CD player). However, tape is still used in vast quantities in order to make 'back-ups' of hard disks, i.e. storing all the data on a hard disk to tape in case the disk should suffer a head crash. See also **magnetic disk**.

MAIL BOX (T): Mainframe, Mini and networked computers, due to their inherent large user base, provide a form of electronic mail that allows these users to communicate to each other across the machine or network via electronic 'notes'. Each user of the system has a mail box of their own and this is used to store incoming and outgoing mail from other users.

MAILMERGE (T): A facility provided by the better word processors which allows you to design one letter using your word processor and then send it to large numbers of people using a stored database of names and addresses - the 'Print Draw' type letter we all receive from time to time.

MAINFRAME (C): Generic term used to describe a range of computers which are the largest and most powerful available at any one time. All of the early computers were mainframes, due in part to the fact that using the technology of the day, it simply wasn't possible to make computers smaller than several of large rooms. Today there are few manufacturers still in the mainframe market, with the exception of IBM and CNA Research. Contrast with **microcomputer**, **microcomputer**.

MAIN MEMORY (T): This is the main bank of RAM memory contained within the computer and used as a measure of its size i.e. that James X-1 machine is simply a monster, it has 64K. See also **RAM**, **ROM**.

MANDARIN (C): Software company responsible for the hugely popular STOS replacement BASIC and add-ons for the Atari ST. Mandarin is about to release a version for the Amiga known as AMOS.



• Sprites 600: Part of Mandarin's highly successful STOS games creation package

MAINTENANCE PROGRAMMER (P): The bread and butter programmer of the computer world.

While others are engaged in new and exciting development work, the maintenance programmer is toiling away with existing computer software in an attempt to remove a bug or adapt it to new circumstances. Maintenance programmers receive the lowest salaries within the programming sphere.

MARAUDER (UTILITY): Infamous American software copying program for the Amiga. The program is designed and marketed by USA software company Discovery.

MASTER DISK (T): Usually, after buying an expensive software package, you are encouraged to make a backup of the original disks, that is, make a copy of them and store the original or 'master' disks away for safe keeping. Unfortunately, many software houses use protection methods with their software to stop you from making illicit copies for distribution to your friends. The practice of protecting software means that you have to use the master disk.

MASTERTRONIC (C): Formed in 1984, the company is responsible for the infamous Budget game. After being bought by Richard Branson's Virgin conglomerate the company began to distribute the Sega console.

MATCHDAY (C): Football game greatly beloved of Spectrum owners, released by Ocean.

MATRIX (T): The matrix is originally a mathematical construct comprised of a series of numbered columns and rows which make up cells where the columns and rows intersect one another. Each cell can be individually accessed by quoting the numbers of the column and row which form it. The matrix forms the heart of computer peripheral the spreadsheet.

MATRIX PRINTER (T): This is the generic term describing printers which use an impact pin or ink jet matrix to form characters on a sheet of paper.

MIBASIC (L): Microsoft BASIC. The adopted standard for BASIC within the home computer market. Almost all BASICs supplied with these machines are a bastardised version of the original. See also **BASIC**.

MEDIAGENIC (C): The corporate name for Activision. See also **Activision**.

MEMORY (T): Notepad! store within a computer used to store programs, data etc. See also **main memory**, **RAM**, **ROM**.

MEMORY CHIP (T): An integrated circuit which - installed in a computer - provides a portion of the memory available to the computer. The memory chip can be thought of as a series of little 'storage holes' in which data can be placed and later retrieved. Memory chips, particularly the DRAM, are in very short supply at the moment due in part to the trade sanctions imposed upon Japan by the United States. This shortage has led to large increases.

in the price of new computers where previously they were decreasing at an exponential rate.

MEMORY MAP (T): This is a document which gives a breakdown of how ROM and RAM memory is divided up within a computer. Several publishers have produced memory maps for some of the more popular home computers, but one of the best is Mapping the Atari from CompuLink which gives a complete description of all memory locations and examples of how to use them to best advantage.

MENACE (G): Popular horizontally scrolling shoot-em-up from Psygnosis. See also *Psygnosis*.

MENU (T): The computer menu is exactly the same as its restaurant counterpart. It provides a selection of possible options, some of which you to another menu (nested menu) or into/out of a program.

METACHARACTER (T): A symbol which is used as a control character within a computer program or instruction. The metacharacter is used to switch a screen to inverse display mode, switch a printer into graphics mode etc.

METACOMP (CO.): Bristol-based company which stepped in at the eleventh hour of the Amiga's development to produce AmigaDOS - a version of Topos.

MGT (CO.): Miles Gordon Technology. The company began life supplying a range of peripherals for the Spectrum but for the last couple of years has been involved in the development of a 'super Spectrum' clone with various ports and goodies.



• Dr. Gordon: Member of MGT and designer of new MGT SAM Coupe

MHz (T): Megahertz - one million cycles per second. MHz is used as a measure of processor speed. For example, the standard IBMPC processor runs at 4.77MHz, many of the PC clones offer running speeds of 8MHz, the ST's 68000 processor runs as standard at 8MHz. Unfortunately, a MHz speed rating doesn't necessarily mean that two machines are running at the same speed, faster or slower. As well as processor speed any performance rating has to account for the rest of the system architecture, such as the address and data buses, speed of drives etc.

MICROCOMPUTER (T): Generic name for small desktop sized computers which are cheap and

available to the person in the street. The first widely-available microcomputers used 8-bit CPUs such as the 8080 to provide a reasonable amount of speed and power. Today's 32-bit processors coupled with hard drives offering vast storage abilities have practically ensured the demise of the microcomputer and offer almost as much power as the mainframe. Certainly, they are significantly faster and more powerful than the mainframes of just a few years ago. See also *mainframe*, *microcomputer*.

MICROCHIP (T): A tiny silicon chip which has many thousands of components etched onto its surface.

MICROCODE (L): A collection of sub-commands or instructions which are held within a computer's ROM memory and which are executed when power is applied to the machine. The microcode defines the machine language instruction set of a computer. See also *assembly language*.

MICRODEAL (CO.): Originally produced software for the Dragon 32, Microdeal pre-empted the 16-bit craze by being the first with hits for the ST and Amiga.

MICRODEALER (CO.): Big league software distribution company.

MICRO ILLUSIONS (CO.): American software company producing a range of utility programs but notable for the application Proton Paint.

MICRO PROLOG (L): A microcomputer implementation of the artificial intelligence language Prolog. See also *Prolog*.

MICROPROSE (CO.): Business alter-ego of crazy 'flyboy' Wild Bill Sealey, the company is responsible for a large range of flight simulation games such as F-15 Strike Eagle, Solo Flight and Gunship. MicroProse recently bought Telecomput putting it in the top three software companies.

MICROSOFT (CO.): Software company based in Bellevue, Washington USA which is responsible for the MS-DOS/PC-DOS operating system, MBASIC, Word, Windows and many other notable products. The company was formed in 1975 by Bill Gates and Paul Allen. Microsoft applications play a large part in dictating the way that microcomputer software applications will progress, due to the immense influence the company has on the computer market.

MINDSCAPE (CO.): American software house responsible for hit games Shadow Gate and Delta IV which set up in the UK at the beginning of this year.

MINICOMPUTER (C): Generic name for a range of computers which were smaller than mainframes but significantly larger than the desktop sized micros. Many companies made their name by designing, manufacturing and marketing minicomputers such as Data General, and NCR. Today, the

powerful, fast, convenient and above all cheap micro has all but killed off the minicomputer.

MIPS (T): Millions of Instructions Per Second - how many instructions a computer can perform in a second. MIPS is used as an overall measure of computer speed.

MIRRORSOFT (CO.): Just one tiny part of the Robert Maxwell empire, Mirrosoft has consistently produced high quality games such as Dungeon Master the biggest selling game for the ST and Falcon.



• Dungeon Master: Mirrosoft game that became a classic

MODEM (T): Modulator DEModulator. A device which, when attached to a computer and telephone line, allows the transmission of data between two computers. The modem is able to operate at a range of speeds typically from 300 to 2400 BAUD (Baud is used as a convenient measure of transmission speed) depending on the condition and suitability of the telephone line in use. Modems are becoming extremely popular at the moment with the advent of the computer bulletin board and many a week goes by without some mention of the computer 'hacker' (someone who uses a modem to gain unauthorised access to some one else's computer and data files) in the tabloid press.



• Modems: Hardware devices which connect to ordinary telephone lines for data file transfer

MODULA-2 (L): Designed by Niklaus Wirth, the language is designed as an extension of and replacement for Pascal. Due to its ease of use and modular approach to programming that is, writing small pieces of code which can be joined together to provide a solution for a particular problem the language is being adopted by many University computer science courses. It remains to be seen whether the business community will adopt the language for applications writing. See also *Pascal*.

MONITOR (T): The television-like display device used by computers to communicate with human operators. Monitors come in many shapes and sizes but the most popular is the green screen green text and graphics as its name implies. The green screen is easy on the eyes for prolonged use. Other popular monitors are the amber screen, paper white and colour screens.

MOTOROLA (G): Semiconductor manufacturer responsible for the design and implementation of the 68 series. In its 8-bit form (6809) this CPU chip was used in the Dragon and Tandy Co-Co. Today's fast and powerful micros such as the Atari ST, Apple Macintosh and Commodore Amiga use the 16-bit 68000 version of the chip to provide powerful processing capabilities.

MOUSE (T): Input device similar in manner to a joystick in that it is used to move around a pointer onscreen to select programs and data. The mouse is a plastic case which fits into the palm of the hand, its underside has a revolving ball. When the mouse is pushed around on a table top the ball moves and the movement is interpreted by the computer it is attached to, moving an onscreen cursor. The case has one or more buttons which can be pressed in order to make the selection when the cursor/pointer is suitably positioned. The mouse is so-called because it is usually the size of the rodent of the genus name and has a tail-like cable to connect it to a computer.



• Mouse: Device to move on-screen pointer - built rather like an inverted trackball

MS-DOS (OS): Microsoft Disk Operating System - system developed and marketed by Microsoft and employed by IBM's PC range of machines as well as many PC clones.

MUG (G): Generic acronym meaning Multi User Game, i.e. one which runs on an electronic bulletin board and which can support many 'logged-in' players at the same time.

MULTI TASKING (T): The ability of a computer to process one or more tasks at the same time. In fact, the each task is performed in sequence by allocating it a tiny fraction of the processor's available time. This action happens so quickly that to a human user the machine appears to be doing several things at once.

MUSIC STUDIO (MUSHC): Musical creation package available for a large range of machines. Version 3.0 for the PC and compatibles was reviewed in Express 30.

MYLAR (T): Brand name for a form of polyester film (plastic) developed and marketed by DuPont which is used in the manufacture of floppy disks.

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The five characters below all work at Lombard Magaholdings, and have been attacked by a virus - obviously they should have had a virus protection routine. Fortunately, the virus could only wipe the directory track of their shared hard disk before it was caught. So their data was intact, but they can't work out whose is whose.

Use your skill and judgment to match the printouts of the data they lost to the people you think they belong to. Then write your answers on a postcard and send it to us. For example, if you think that example A goes with person 1, write 'A1' and so on. Do this for all five examples, add your name and address and send it to: 'Sleepsafe' Virus-Buster Competition, New Computer Express, 4 Queen St, Bath BA1 1EJ.

● PEOPLE

- 1 Eric Lombard: Managing Director
- 2 Jority Ward-Davison: Creative Planning
- 3 Jennifer Adams: Advertising Sales
- 4 Ron Saggitt: Cleaner and odd job man
- 5 Sharon Collins: Typing Pool

● PRINTOUTS

A ...my hair dryer. After that we can go to the disco and meet up with Kevin and Shase. Kevin and I are going on holiday to Corfu next week. He wanted to take the Capri but I thought, I bet I end up driving...

B ...the toilet. If you ask me the ballcock needs replacing too. As far as the gutters, I don't mind if you want to leave them to next year but they will need some patching up mean time...

C ...my third mortgage. I've sold the Porsche and bought a timeshare apartment in the Algarve, and I'm renting my second flat to the people who sold it to me for a hundred quid a week more than my mortgage, and my yacht...

D ...the 'concept' behind it. This campaign must focus on brand identity and appeal to the 'aspirational group' of 16-24 year olds. They feel sympathetic towards, and 'identify' with, the 'product', and make spending decisions on the 'product' based on a desire for...

E ...the golf club. The shop floor workers want an extra 5%. This is too much. 2.3% is quite enough, given the extension of the tea break as agreed. As for the stewards, they are a bunch of Marxist troublemakers. When you employ typists check they're not planning a family - I don't want to get tangled up in maternity leave and such nonsense...

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If so, which one do you own?

AMIGA BLIT

Anco's (football) strip

It seemed impossible, but Anco has produced a game that does not feature even the slightest hint of Amiga flash. The game in question is Kick Off, and I can tell you now that it's a real toiler!

If you're after a game that will keep you chained to your Amiga for months to come, then check out Kick Off (I never thought I'd see the day when I'd recommend an Amiga game). Kick Off is best played between two players, so grab a friend and dump a joystick in there. Inside eventually they come within a mile of your machine.

A-MAX at Last!

The Amiga's first Macintosh Emulator has finally arrived. After many months staring at the advertisements in the Amiga press, AmigaSoft's A-MAX has finally arrived in the UK, thanks to Entertainment International.

I've only just managed to get my hands on one. It arrived on the same day that this column was written, and as I don't comment on how well it performs. Look out for next week's AmigaBLIT for a complete run-down on this groovy piece of hardware.

Hard Facts for LORS

I recently received a letter from an old Londoner, named Blackness, concerning

Microsoft's Lords of the Rising Sun. In the manual for LORS it specifically states that the game can be backed up to hard-disk using a supplied hard disk installation program. I'm tempted the game, took it home and prepared to back LORS onto hard disk only to find that with the UK version of the game you can't.

Thankfully, for all of you sceptics from the same problem, I was well enough to include complete instructions on how to put LORS onto hard disk yourself.

Firstly, you must copy all the files from both LORS files onto your hard disk (eg. COPY DIR: LORS: ALL). Next, with your StartUp Sequence to the following:

BOUNCE DIR:
ASSIGN Ringflash1 DHD:
ASSIGN Ringflash2 DHD:
RUN MACH

Note that you'll have to copy the CU Mouse command and the MouseList file to your LORS boot disk. Now when you reboot your Amiga, after LORS has checked to make sure that the disk in drive 0 is an original, control will be transferred to your hard disk.

Mouse resuscitation

Amiga owners will know that the first thing to go wrong is usually the mouse. The most common problem is malfunctioning buttons. These can be fixed as follows:

Firstly, open up your robot and carefully remove the sticky tape binding the mouse button lead switches. Next, wipe the pressure pads and re-apply the sticky tape. Put the mouse back together; chances are that your mouse buttons should now work!

Sadly the other mouse button will stop functioning! Well the problem isn't just with the left switches, but the actual mouse button itself which can become worn. Thanks to David Collier to Kent for that tip.

Jaime Neilson

Throwing down the Gauntlet

Here are a couple of little chess programs for those of you struggling to overcome the forces of evil in either US Gold's arcade conversion Gauntlet 2, or Elite's Space Invader. Try the following into AmigaBASIC, save them (just in case) and then run them. Note that you should turn off your Amiga before trying to use either of these cheats.

```
10 REM *** GAUNTLET 2 CHEAT ***
20 CHEATON = 0
30 DATA 261244,250288 = 262271,250080,40
40 GAUNTLET 270 START = 364,251638 = 360,0000 = 50,500,100
50 FOR B=50500 TO 251638 STEP 2
70 READ A:WVAL("A")
80 CHEATON=CHEATON+A
90 PRINT A: A NEXT A RETURN
100 IF CHEATON < 750012 THEN PRINT "CHEAT ON!" END
110 PRINT "GAUNTLET 270 CHEAT ON TO 300"
120 PRINT "GAUNTLET 270 CHEAT ON TO 300"
130 PRINT "GAUNTLET 270 CHEAT ON TO 300"
140 PRINT "GAUNTLET 270 CHEAT ON TO 300"
150 PRINT "GAUNTLET 270 CHEAT ON TO 300"
200 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
210 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
220 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
230 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
240 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
250 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
260 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
270 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
280 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
290 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
300 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
310 REM *** ELITE SPACE INVADER CHEAT ***
320 CHEATON = 0
330 FOR B=50500 TO 251638 STEP 2
340 READ A:WVAL("A")
350 CHEATON=CHEATON+A
360 PRINT A: A NEXT A RETURN
370 IF CHEATON < 750012 THEN PRINT "CHEAT ON!" END
380 PRINT "ELITE SPACE INVADER CHEAT ON TO 300"
390 PRINT "ELITE SPACE INVADER CHEAT ON TO 300"
400 PRINT "ELITE SPACE INVADER CHEAT ON TO 300"
410 PRINT "ELITE SPACE INVADER CHEAT ON TO 300"
420 PRINT "ELITE SPACE INVADER CHEAT ON TO 300"
430 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
440 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
450 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
460 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
470 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
480 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
490 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
500 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
510 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
520 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
530 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
540 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
550 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
560 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
570 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
580 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
590 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
600 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
610 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
620 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
630 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
640 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
650 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
660 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
670 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
680 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
690 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
700 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
710 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
720 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
730 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
740 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
750 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
760 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
770 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
780 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
790 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
800 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
810 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
820 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
830 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
840 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
850 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
860 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
870 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
880 DATA 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000, 3000
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PC UPDATE

Restricted characters

I came across an annoying problem with a batch file the other day I had several 'echo' statements in a batch file one of which read

Remain to the A: prompt and...

For some reason, every time I ran the program none of the line would display I began to have serious worries about my batchwork. What was there in an 'echo' statement that could cause a normal screen write to be ignored?

I tried a variety of ways around until a friend, who had become interested in the problem, suggested looking at each character in the offending line. As you can see from the extract above, the only character which is not a straight alphanumeric is the ">" (greater than) symbol. How many readers have twigged what the problem was? To DOS, the ">" character is a redirection operator which sends the output of the preceding command to the succeeding device name. In this case the command was 'echo' and the succeeding device was taken to be a disk file called 'prompt'. The command was sending the start of the line.

Return to the A:

to this file, so that part wasn't displaying. Since the batch processor only allows one command per line, the rest of the line after the ">" was ignored.

The solution, of course, was to replace the ">" in the line with a ":", whatever

everything returned to normal. The moral of this little tale is, as Sherlock Holmes once said "When you have eliminated the impossible, what remains, however improbable, must be the case."

SuperHelp

When you first buy a PC and start to use DOS it's very easy to become completely confused with the many different commands and questions that the operating system provides.

Online help, which you can call up at the flip of a fast key, will see the answer. One such system for hard disk users (it takes up nearly a megabyte on disk) is SuperHelp, distributed by somebody in this country whose name was lost in transit (or it could have been a Shropshire or a Remond's Trade). The price is also available at this stage, though I'm sure lots of people will let me know as soon as they read this. Anyway, the program itself is very good, giving lots of details of DOS and including some animated descriptions, all in a pop-up package. Probably well worth the money!

Wasted space

One of the bones of contention with PCs marketed with 1Mb or more of memory, is that a good part of the extra memory may be wasted due to the memory mapping of the PC. As it was designed, the IBM PC could address 1Mb of main memory, with up to 640K available to the user. All users have to give some of this over to DOS, so there's actually less than 640K available. The area of memory between 640K and 1Mb is broken down into small sections and assigned to various ports and video areas. There is, for instance an area of 64K assigned to displaying a CGA screen. There's also an area of 256K assigned to displaying an EGA screen. These two areas do not overlap, even though you're very unlikely to run a CGA and an EGA monitor from the same PC.

The assignments, or mappings as they're often called, fill all the available space and it's very hard to make use of it, even when you're not using the peripheral to which the space is allocated. There's a partial way round the problem which involves jiggling pointers with the memory map to fit available memory into the space above 640K. A combined hardware and software device called 10PC does this for you, and is especially useful if you have a Monochrome or CGA machine with 640K of memory. It contains 4MB of RAM which it slides into the memory map in the area normally reserved for EGA displays. This gives you 744K which can be used by any program. The card costs £149 plus VAT and more details are available from Context at (0432) 5688.

Simon Williams



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CPC

Thunderbirds are go!

Granddaddy got hold of one of the licences of 89 Gerry Anderson's Thunderbirds. And what good value you get! For £13 on tape and £15 on disc (now that's what I call a sensible price difference) you get double play and an audio cassette of that evocative, nostalgic theme music.

Perhaps the game itself is not the superficial flashiest but rather Tracy fast with feeling. There are four separate computer missions for you to undertake, each within a tight schedule. And the general tone of the thing is just right, too, with humour, mystery but no miskey-jinking of our favourite adventures - as if they'd died! Gerry Anderson himself has been involved in the project, so a credit to be given.

Granddaddy appears to be plotting to hopes on this being one of the great successes of mid-88, and I'd say that to gameplay and value for money they should succeed.

What troubles me slightly is whether enough young people - and in this context that means the under 26s - are excited by the prospect of a game based on a long-remembered puppet series. It's beginning to look, these days, as if anything that was considered safe or irreverently kitsch back in the 60s or 70s - *Star Wars*, *The Monkees*, *Thunderbirds*, *Julia* and *Ben* - is now treated as a high point of western civilisation in the mad to late twentieth century. What's happened, of course, is that time has given these other badly made and frequently desperately dull period games a respect that obscures their mediocrity. Things aren't what they were - but then again, they never were.

Incidentally my friend Trevor - who hardly seems old enough to suffer such a bad attack of nostalgia - fancies his chances on the next season of *Masters of the Universe* with *Thunderbirds* as his specialist subject. Anyone willing to challenge him to a competition, with a copy of the game as a prize? Write to: *Thomas Pridmore Editorial*, New Computer Express, 4 Queens St, Bath BA1 1EL.

Sound of silence

Just been playing *Kix's Shave or Die*. It's fun, and I'd even go so far as to say I think they've done the right thing by Lester and his outburst sidekick in opting for monosound as they can fit more action in. All in all, a very creditable showing.

But, what I don't agree with is *Kix's* decision to smother the in-game sound to such an extent that you can't hear about 50% of the music. I said a few weeks ago when I saw a preview that sound effects would make a big difference to the overall atmosphere of the game, and I stand by that observation.

Compare what they've done with Granddaddy's *Thunderbirds* (see above) where not only do you get in-game effects but an

audio cassette of the theme tune too. Admittedly there was something there to begin with, but even so it seems to me that music and in-game effects are vital to the atmosphere of any game. Has there ever been a truly brilliant CPC title that didn't feature decent sound effects?

A pair of briefs

A final reminder that it's not yet too late to enter the CPC Centre competition to win a free copy of Soft Software's C20 Pandion, the new machine-code program generator that means you can write professional quality games without knowledge of machine code. All you have to do is tell me who Pandion was - at it down on a postcard, or the back of an envelope, and bang it off quick as you like, to: Simon Caley's CPC Centre, New Computer Express, 4 Queens St, Bath BA1 1EL. Entries close at the end of the month.



• Calling International Rescue!

The other brief

The keen-eyed among you will have noted that I was so flustered by the *Granddaddy* piece I offered you two again and for nothing in this column a couple of weeks ago that I gave it your notice.

Apologies - though I doubt any of you lot would be daft enough to type the thing in twice!

Steve Carey

By Jimmy - no cricket!

The Aussies don't appear to be quite the powerhouse many of us have expected, and we appear to be in for a thrilling Test series after all. But sadly enough there hasn't been a decent cricket simulator for the CPC (nor indeed for any other machine, as far as I know).

And yet you'd have thought cricket would be eminently suitable as a simulator subject - especially when you compare its poor showing against the rentable analogue of *Boxer* effects that has cascaded upon us. God knows what it'll be for next year, with the *World Cup* and all. Androgen's *Cricket* is a goodly port punch, *John's*, of course, is no kisser. I'm at a loss to explain this state of affairs, and welcome any thoughts you may have on the subject.

Incidentally, there's no track unfortunately in the notice that a CPC version of *Boxer's* stupendously wonderful *Hot Off* is planned. It's a horrible pity, because as *Kix* "The *Hitman*" Hayes says it's "simply the best football sim we've played on any micro." Still, there's a Commodore 64 (and others, so who knows?) P enough of it as a first, perhaps we'll get lucky after all.

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Enigma variation

I often get letters from 128, +2 and +3 owners ranting about the way their machine slowly gets its entrails out. I get to say yes. The devoted followers at 128E called Jim Jones and Kenneth Runt have now decided to stop ranting and do something about it.

The result is Enigma, a new tape mag especially for those of you in the audience endowed with a larger memory. This dynamic duo were kind enough to let me have a look at their earliest attempt, and I'm suitably impressed.

The first issue has been shoehorned onto one side of a C80 cassette and comes complete with 16 of old, readily bits at the foot of an excellent soundtrack, numerous graphics FX and screenshots. These are really welcome and help it stand apart from more traditional paper efforts. The reviews section is particularly good with some hard-hitting views, eloquently written by a Spectrum games expert who knows his stuff, and a selection of screenshots which let you see how the game actually looks on your TV. Importantly, the reviews also inform you of any enhancements to the 128 version.

As well as the normal selection of news, views and tips there's also a section specially designed for readers. It seemed to import some pretty useful, if a little I'm not sure.

Something that's planned to be included on each issue of Enigma are separate programs and routines recorded after the main text of magazine itself. In issue 1 this included a

creative genius behind the project will get around to producing a +3 disk version, I'm certain the demand is there. But, +3 owners and everyone else who thinks, like me, that the 128/+3 doesn't get a fair stick of the pie is advised to purchase a copy forthwith. Each bi-monthly issue costs a reasonable £1.99 or £1.50 if you supply your own tape (C80/C80 length). The address for orders is Kenneth Runt, 35 Washfield Road, Liverside, Aberystwyth, AB9 7YR.

Sticky tapes

Here follows a warning for +3 owners, courtesy of Gyanprakash. It's been having problems with some +3 software whose save-game option only allows a save to tape and not disk. What with the +3's tape loading and saving being a bit erratic and everything this is a far from ideal situation.

Examples of troublesome games include Master's Quest 2D and C&S Jack the Ripper. Apparently, March has promised to verify this in the future, which is good news because, as Grant said in his letter "we do pay over the odds for +3 software and do expect it to support proper disk-based loads and saves, and not to be simply the cassette version transferred onto disk." Hear, hear!

Another possible source of blood pressure-raising frustration is when a +3 release turns out to be a cut-down 48K version. As an example to cite the version of *Snaggleford* found on Beta Jokers' +3 Spectrum Challenge compilation, which has none of the music or speech of the original snaped-up version. Also Runt, included on the same compilation seems to tape enough to make any "Get on ABBEYDILL!" or "Oh Great PC!" Slightly or more examples of this obvious incompetent policy will arise because, believe you me, we +3 owners are pretty mean when roused.

Hot tips

I've got yet another selection of tips for you on a veritable cornucopia of games. Well, three anyway:

- **Burbaris:** Force your opponent into a corner and give him a few kicks to the outer regions. He won't die, then you come to this, jump the first lightning bolt and kill him. Pressing Symbol Shift and Forward mode does things down.
- **Ruby Holes:** When you see a marble, duck. They don't know you're there.
- **Aldorne Ranger:** Go into the ground house



for a disguise. Sneak up to the PW (map) and if you are attacked run to it. Throw a grenade at the ground and walk over lever. Burn machine-gun at 6000.

Many thanks to the Managing Director of Concept Software, head of the +3D user group, prolific letter-writer and teenage entrepreneur, Les Davis for these. Since his Public Domain software house was plugged in SFX he has been inundated with orders. So much so, tape software has had to be withdrawn for the meantime. He also tells me that you can now send a blank disk with your order and get a fair amount of disk knocked off. Probably the best way to get all the low down dirt would be to send an SAE to the address printed in Expend 21.

Robin Atwell

Enigmatic advice

It's always nice to be able to help a fellow computerer with his Spooky-sounding problems (everything else is best left to Majorie Propp). David Sheldrake's list of problems appeared in issue 20, some of them were answered but so many more weren't. Well, as it's magic one half of the Editorial team behind the aforementioned Enigma tape mag has written in and answered them. That man is Kenneth Runt.

David wanted to know about a +3 compatible assembler. Kenneth understandably suggests the one given away with Enigma 1 (ordering outside please). On the problem of the +3 RAM paging the Scottish manual sets forward the following:

LD BC, 32765
LD A, RAM PAGE (16, 17, 18, 20, 22 or 23)
OUT (C), A

He points out that you must "keep the stack below 49152 as well as any code doing RAM paging" to move stack - LD SP, ADDRESS.

However, yes, heaven knows what that means but I'm sure it's helpful. Readers put your hands together for Kenneth!

musical extravaganzas from Players, some simple games and a full size assembler, no less. Good to see the tape-based nature of the mag being put to good use, and extra like the above certainly improve its value for the money asked. The file area here to get the membership handbook and the mag provides an excellent way for building progressions to see their creations on screen.

Enigma only works on machines with 128K and initially is available on tape with the possibility of +D version. Hopefully, the



Personal Professional could be the answer. It's a database specially designed for keeping tabs on your place and is recommended by the British Association of Picture Librarians. Costs £24.95; details from Pre-Act Software at 28 Chestnut Ave, Malden, Essex, CM9 7BA.

Pigg book of records

Biggest file
The biggest file on any commercially released piece of software was a 200M library file on PreAct's *Personal Professional* released November 1988. This was a big file took several minutes to load and made use of the program virtually impossible.
● **Keep any PCW superlatives?** Send to: The Pigg Book of Records, New Computer Express, 4 Queen St, Bath BA1 1EL.

A (bleep, bleep) tip

Robin Copie of Woodchester writes in to tell how much he enjoys PCW Patch, and wonders why we don't make it compulsory, and why he never bothers having it at all. Thanks for that vote of confidence, Robin. He notes that the BASIC command OUT 248.12 will turn on a continuous bleep - perhaps useful for a "beep alarm" - and OUT 248.12 turns it off again. OUT 248.13 rebots the disk. "Maybe someone can find a use for those", he adds.

Quids in

Robin also notes that the 'Special Reserve Club' which advertises regularly in Express in a buy cheap PCW software. For £1.50 per disk postage and £1 a year subscription you can get bargains like *Check Chase 88* for a time, *Max Office Professional Plus* for three, *Accountable Man* or *Catch 23* for four quid.

David Page



B-Tree File Management

Most file management systems use at least two files - a main file in which all the records are stored, and one or more index files, which contain keys, usually in the form of an ordered list.
B-tree indexing uses keys which are stored in a B-tree, somewhat similar to a binary tree, but giving much more efficient retrieval and storage.

Lightning Special Edition

Digital Precision's popular 'Lightning Accelerator' program has been enhanced. It is now available on ROM, giving something like 25% - 20% more speed, as well as cartridge and disk.
You can now have different fields in different windows, and just scrolling - that is, scrolling a page at a time, rather than a character at a time.
The price is £28.95, and AS has been knocked off the standard version. DP is at 00 527-5493.

For programmers who want a set of b-tree routines that they can use with a conventional programming language, such as C, b-tree

packages consisting of a set of sub-routines are available for the PC, and some of these packages are even available in source code form, so can easily be ported to any machine with a C compiler.

When Leon Heller (former Quanta chairman) and I wanted a b-tree file management system for the QL, we looked around for a suitable low-cost package, and eventually chose the Software Effort package available from Gary Marter for £20.

When we had transferred the package to the QL (it comes on a PC disk), we put all the source code through the Lattice C compiler, and encountered several problems due to the many bugs in that product. It took us two days to get it working.

How does it perform? We tested it with 3,000 records on a floppy disk, and any record could be retrieved in under two seconds. With 7,000 records on a QL equipped with the CST Winchester, retrieval times were something like two seconds.

The theoretical limits of the package are as follows: index files with up to 16.7 million entries, and data files with up to 16.7 million records. Key and record sizes are virtually unlimited.

Leon Heller has supplied several Quanta members who have purchased the package from Gary Marter with a library file of the compiled BTree routines, ready to link into their programs. Gary Heller is on 00841 5458.

More Bugs

If you open the .net port (either explicitly, with the OPEN command, or implicitly with LOAD, GOTO, etc.), the channel cannot be properly closed.

John Teedon

Base actions

So Edward Eggar once said that it was straightforward composing music: you just "stick it out for six, and take as much as it is able to be required".

As most writing - especially non-fiction - involves repackaging essentially the same chunks of text over and over again (just read any computer magazine!), a writer's version of this would involve plucking your ideas from chunks of text in databases, or from text already stored on disc. Find the right bit, cut, and paste the bit into your document, and away you go.

Expressweek has brought out two "text" databases - aimed for writers who manipulate several chunks of text at the same time. *ScriptBase* works with Loadscript 2 and TextBase with Protext. They took good use - review text, week. Makeable more info on 0279 051890.

Snip decision

Photographer A: This guy began with a cropped child, came up to me in Madrid and asked me for a thousand pounds.
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Now that it's summer you'll want some way of cataloguing all those holiday snaps.

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BEEB BOX

Whale of a time

Educational software house Topologika has several new programs out, including long-delayed *The Myth of Moby*, which is a three-part graphic adventure. Part of its *Whales and Dolphins* project, the package captures the flavour of the month with its 'green' feel. Also late is *The Curlew Software pack*, which is not a manual for teachers, but an aid to teaching kids about maths. I notice also that PC and Minis versions feature in its other new offerings. Catch up with your Pantheon, and Book pack.

Nick Valley has combined and enhanced its *Blizzard* and *Colobus* software into one package, called suitably enough *Blizzard-Colobus*. Costing £19.95 including its own mouse, it's good value, but as the latter advert says, 'not that good'.

A3000 MIDI

If you're still not quite sure exactly what space the A3000 machine has, then you're

Conspiring to plot

Schoolteachers pay attention, because you could win one of these sumptuous fabricated prizes for your school. Linear Graphics Ltd is organising the competition in support of the DTI's Design & Technology programme. Get the details on 0686 29292.

probably not the only one. However, I can clear one thing up for you. The MIDI interface is not built in, but will be available as an internal upgrade, prior to be decided.

Warp factor nil

I've already looked at *Return of the Jedi*, but I was still pleased to receive a picture copy through the post. I was less pleased to see that no motion at all was made of the levels on the packaging, apart from a tiny little sticker. Makes you wonder how they are going to reproduce the looking out of money for the product doesn't it?

High stakes

People who gamble on horse racing never admit to losing money, so for those and others who can defy the implacable laws of statistics *Blue Ribbon* have brought out *Turf-Form*. At £2.95, less than the cost of a good Yuliste it offers the gambler quite a chance to "Beat the Bookies". Their words, not mine.

DTB snap

Acorn's DTB package is new, ready, but be warned all you A310 owners. Before you rush out to lay down £149 (plus VAT) the program really requires 2Mbyte of RAM to run well. Before you weep and gnash teeth however, I do hear rumours of a third-party memory expansion board for that machine. More details when I get them.

Broad tip

A neglected BASIC keyword is the WIDTH command. Use it when spacing listings for use in wordprocessors to avoid problems with wordwrap.

Andrew Brown

MSXTRA

Konami magazine

At last it looks as if the Konami Software Club magazine has been distributed, although, as I write this week's column, I have yet to receive my copy. Talking to Mark Smith, the mag's editor, it seems that all members should have received the magazine by now, but he had to admit that a few members had phoned him asking where their copy had got to.

The only explanation he could come up with was that they were using a new company for the distribution of the magazine, and they seemed to be having a few problems. He apologised for the delay and hoped that by the time you read this all members will have received their copy.

Regarding software from Konami for the MSX use, it seems that it will be placing more emphasis on producing software for the games consoles, such as the Nintendo. This does not mean that Konami has finished with the MSX, but it is possible that we will only see one more title from them this year.

Turning Japanese

Some good news regarding software is that more and more titles seem to be arriving from Japan, and games such as *Barbarian* and *Thorpolis* have been converted to the MSX. As soon as they are available in the UK, you're sure to read about it in this column.

Joysticks plus

De Gale Marketing has now enlarged its range of joysticks, as mentioned in issue 30 of Express. I mention this fact again because De Gale Marketing points out in the press release for these products that all the joysticks in this range are true MSX joysticks, and have the independent fire button feature that many MSX cartridge games require.

Prices for the four joysticks in the Quickjoy range start at £8.95 for the Supercharger, up to £19.95 for the top of the range Quickjoy V Superboard.

Self drive

Fancy building yourself a disk interface that will allow you to use any Sharp disk drive on your MSX computer? Well, in this month's MSX TECH newsletter, detailed instructions on how to build this device are presented.

This is not a task for the complete novice, I can assure you, but for anyone with a little technical knowledge, the task isn't too daunting.

The main problem will be obtaining the MSX Disk Operating System, although I do say in the article that Sony would probably sell you a Rom if you asked nicely. If you can build one of these interfaces you are bound to save yourself quite a bit of cash, as you should be able to build the interface, and add a disk drive, all for under £100.00. Given a second hand MSX drive, and you would set you back more than £150.00, so this project, and how to obtain a copy of the MSX TECH newsletter, send an SAE to J. Whiting, c/o Hockbeath Crescent, Bradford, Commem, Milnes Keynes.

Keith Neal

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Only one more month and the 1989 BBC Acorn user show will be in full swing. It's being held in the west hall of the Alexandria Palace in Wood Green, London between the 21st and 23rd of July. Opening times are 9pm-9pm on Friday 21st and 10pm on Saturday and Sunday 22nd and 23rd. Entry charges are adults £3.50, children under 16 £2.50, with a pound off if you buy the tickets in advance.

The show promises to be very interesting to all Acorn users, with approximately 80 exhibitors and 100 stands covering a wide range of products including the latest hardware, software and peripherals.

This is the biggest ever Acorn-specific show, and representatives of all the major software and peripheral manufacturers including Watford Electronics, Computer Concepts, Mavira Systems and Classic Micro Supplies will be there.

It's been said that the new A3800 will be on sale for the first time. There will be lectures and seminars from Acorn's own experts and plenty of secretaries.

Hot hints

You may remember I asked for a website to increase the speed of the machine as a joke -

who needs a speed increase when we have the fastest store available to the home owner's memory? Well, I had a letter from Matthew Tregear of Southampton which wiped the smile off my face. There is a way to increase Acorn's speed and here's how to do it.

Simply fire up BASIC and type `999 "OS_UpdateMEMO" 84.94`. By entering this line, the ROM clock speed is doubled, matching the RAM clock speed. Unfortunately this only works with some machines (those with less than 640KB). ROM chips will become warm if you push them at double the speed, so use this tip at your own risk (1).

Wot, no DTP?

I'd hoped to be able to get a copy of new Acorn's new DTP package for this week - unfortunately I still haven't got it, sorry! I shall try to get the package for next time.

Share and share alike

As with any newish machine, there isn't much software around for the Archive and what's available is relatively expensive as how about some cheap shareware products. Shareware is software that you receive for free, try out, then if you like it, send off a small donation to the author who will keep you informed of upgrades, send you full manuals etc.

Norwich Computer Services have produced 13 shareware disks to date. Priced around £3 each, the disks contain approximately 8000 of utilities and other programs. You can contact Norwich Computer Services on 0603 587967. The company also produces a magazine Archive. More details on the number above.

See you next time.

Larry Brown

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TECH TIPS

Problems with your computer? Express's Agony column has the answer. Write in strictest confidence to Uncle Techtip.

Best tips win a freebie - so don't forget to tell us your address and machine

HELP!

Monitoring progress

I'm on the verge of buying an Atari ST and until last month was satisfied that my impending purchase would be great, for along with the ST, I was going to buy a colour monitor and printer. However, last month, I saw an article on multi-synch monitors

Or output to a TV? Can the TV show all the modes?

I'm going to be using the ST mainly for games but also want to run some serious word processing stuff.

I realise that this is easy-peasy stuff, but no less confusing to me for that! Finally, does software give you a choice of output mode?

Kevin Concombe, Cleethorpes



• The Atari ST offers three graphics modes - can one monitor cater for all of them?

which completely confused me.

Am I right in thinking that the ST has several 'discrete' modes of monitor output? If so, do you have to have a different monitor for each one? Is a multisynch my best option?

• The Atari ST does indeed offer several display modes and to view all of these you must have two distinct screen types. The modes themselves are high resolution, medium resolution and low resolution.

BUG OF THE WEEK

On the Amiga and C64 versions of Micro Soccer there's a crafty bug that will allow you to score frequently against the toughest of opponents.

Run with the ball on the far right hand side (up the pitch or down). As you near the end of the pitch get an opposition player to follow behind you. Stop just before the very end of the pitch to prevent a goal kick. Now the player behind you will tackle - forcing the ball out for a corner every time. Now take the corner

in the usual way and another of your players will always be waiting to hammer the ball into the net. Just hold the button down and move in the appropriate direction. Graham Ruston, Hodge Hill, Birmingham

• *Urosoma tursor* The two species of this genus found in central Europe and Britain live in dry branches, various deciduous trees and programmers' cranial cavities. They occasionally drop into RAM chips, where they feed voraciously on any bits of code to do with word



The low and medium resolutions can both be viewed using a domestic television set or ordinary colour monitor, but to make use of the high resolution mode you must have a high-res monochrome monitor. A - more expensive - multi-synch monitor will allow you to display all modes. If you plump for the colour monitor TV as your display then you can still make use of the high-res mode by obtaining a plug-in from the public domain (try Alpha Computing 32 Meadow Drive, Hales, West Yorks) which fools the ST into thinking it has a monochrome monitor attached.

A TV set fit fine for games, but will soon strain your eyes if you plan to word process for any length of time. Buy a multisynch monitor if you can afford it, if not, then an ordinary colour monitor.

HELP!

Writing games

This is not really a technical problem as such, but I hope you can help. I have mastered Amiga BASIC and want to upgrade to a better language such as assembly or machine code. I am very keen on writing games like R-Type etc. and I would appreciate it if you could tell me all the necessary items I would require to write games and some good books to go with it.

Also will it be possible to transfer the music from Aegis Seek into this language? Yet another question is, if I designed sprites using Deluxe Paint 3, would I be able to include these in the language?

I'll understand if you don't answer this letter, since you probably get hundreds of letters from budding games writers.

Derek Stacey, Ayrshire, Scotland

• Have you heard of the STOS BASIC language product for the Atari ST? STOS is a replacement BASIC which has lots of extra commands to enable you to write arcade or other types of games, which runs very fast and looks good. As well as the STOS BASIC package itself, there are a sound sampler, sprites collection and compiler for the BASIC - all at reasonable prices.

Soon (very soon, I'm assured) Mandarin Software will launch a version of this language for your Amiga. Known as AMOS, it will allow you to write the kind of games you want easily and effectively. For more information call Mandarin on 0625 878888.

HELP!

Hot cross assembling

I am interested in writing machine code programs on my Amiga, but for use on my CG4. Is it possible to develop 6802 code on the Amiga (what software would I need and where could I get it from) and connect the two machines together via the RS232 port to transfer my projects onto the CG4 for testing? Christopher Gill, Flint, Cheshire

• If you mean that you'd like to test the programs under a 6802 emulator running on your Amiga, then unless there's an emulator lurking in the public domain, I'm afraid you're out of luck. I know of no emulator to allow you to run 6802 code on an Amiga.

If you simply want to write the code using your favourite Amiga text editor then port it across to the CG4 via a serial cable, then this is feasible, although a little long-winded and pointless. Stick to the CG4 and a good assembler to write your source code. The keyboard is usable, there are plenty of good text editors around (or you can use the one that comes with the assembler) and 6802 code is the machine's native language. It's faster and easier than using an emulator (even if you can find one).

HELP!

Stopped in its tracks

I've just purchased a copy of Lombard RAC Rally and to my disappointment it did not work. When the game loads, it stops half way through a stage and you can't get out of it. But then if you load the game in again you can play it until three bombs appear. I analysed the disk with a disk editor and found track 79 to be damaged. A friend of mine purchased a copy of Lombard as well and exactly the same problem occurred - track 79 again! Do you think it could have been a faulty batch of disks or could it be a virus, if so why do the three bombs appear?

• You've got me! There's no news of a faulty batch of disks and I think the idea of a virus is unlikely. If a virus was present then you'd almost certainly receive a message of some kind. Did your friend experience difficulty with their disk on your machine, or did it refuse to work on both yours and their computers? If any techtipers can shed some light, call me.



• Mandarin's Lombard RAC Rally is it huge?

HELP!

Feed the PET

I have recently been fortunate to lay my hands on a 3032 model CBM PET

and have found it a very competent machine considering its age and specification. However, I would be most grateful if you could help me with some of my queries.

1. Is there a user group that I could join which would help me in laying hands on second hand soft/hard ware for my PET?

2. I have become interested in collecting vintage computers like the PET, Atari 400/800, ZX80 etc, wear a nylon anorak, wire rimmed spectacles and attend a train spotters club on a regular basis! Is there a cure on the NHS for my disgusting disease?

James Coddish, Marnborough, Essex
 • 1. Contact ICPG at 30 Brancaster Road, Newbury Park, Ilford IG2 7EP, which should be able to help with PET bits 'n' pieces.

2. I have a pristine Cric Armo which is surplus to requirements (even Uncle Tech gets caught occasionally) that I could let you have for a modest sum.

By the way, I'm still trying to dig up some guff about PET BASIC. Hopefully, I'll be successful in a week or two, so hang in there. If any Techsperts have a PET BASIC manual they don't need, send it to me and I'll pass it on - you'll be rewarded.

HELP!

XLent!

I have an Atari 600XL and an Atari 800XL which have the revision B BASIC in them. Can you tell me where I can get the revision C BASIC ROM ICs and is there any way of upgrading these machines?

I have bought an Atari 1010 cassette recorder without a power supply unit, can you tell me what the power requirements of the recorder are? Is the centre pin positive or negative? What are the correct connectors for linking the data recorder to the computers?

Can the Quine LetterPro20's printer be used with the Atari 600/800XL, and which would be the most suitable interface to use?

Woe George Woods, Walton, Liverpool
 • The BASIC can be upgraded by revision C BASIC on cartridge which simply plugs into the ROM cartridge port. Contact Silica Shop on 01 580 4000, which will be able to help.

So you just have the cassette recorder without the serial connection cable or power supply! Atari's a very good buy, was it? Again, Silica Shop should be able to help you with a suitable power supply and a serial cable.

Using the 810 interface you shouldn't experience any difficulty with connecting and using the Quine printer.

HELP!

A loss of memory?

I own an Amiga 500 expanded to one megabyte and recently purchased War in Middle Earth by Melbourne House from a local computer shop. Upon getting it home, I found it would not load so I took it around to friends who own an Amiga 500. To my surprise, the game loaded and ran on his machine. I understand that some games will not work with the memory expansion fitted. Is this the

case with War in Middle Earth and if so, how can I play it without physically removing the memory expansion (I had difficulty in finding it in the first place and I do not wish to risk damaging the Amiga). Bearing in mind that all my other games work do you think my Amiga is faulty?

Andrew Yalke, Peterborough

• Once again, it's good news and bad news time. There's nothing wrong with either the game or your machine, the problem lies in the expansion. Although that is working perfectly well too, certain commercial games software won't work with the RAM expansion it is.

To solve the problem there are utilities in the public domain which allow you to 'switch off' the RAM expansion card but unfortunately, they won't work with commercial software (due to the protection systems in use). It's down to plugging and unplugging I'm afraid.

TIP

Got the blues

I have noticed that it is possible for Amiga Elite players who enjoy The Blue Dunsbe to listen to it whilst watching a few Thangos.



• Amstrad PCW is it compatible with PC?

Simply press H to hyperspace then, when the counter is down to 5 or lower engage the docking computer. The Blue Dunsbe will now play until you reach the next space station.

David Dvington, Worcester

HELP!

No no no

Three questions:

1. Is the PCW compatible with an IBM-PC such as the Amstrad 1512?

2. Where has the release schedule gone?

3. Can you start up a Centax guide for us proud BBC/IBM teletext (ATS) ROM owners, once a month?

Simon Denton, Taunton, Somerset
 • 1. No. The Amstrad 1512 is not an IBM-PC, it is an IBM-PC compatible and IBM wouldn't thank you for thinking otherwise! The only way to transfer data is by connecting the PCW to a PC with a cable. This limits you to ASCII and data files.

2. It was dropped because it was found to be unprofitable. For Software Information Servers, which collected the information.

3. No.

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INTO THE VALLEY OF DEATH...

Rik Haynes rides over the latest releases without any need of the six hundred!



BATTLE VALLEY HEWSON

As a US mercenary, you have to take out some terrorist desert bases in this hectic Hewson shoot-'em-up, already released in budget form on the C64.

The aim is to get back the last two medium range

nuclear missiles made before the worldwide arms treaty came into force, and which have been stolen by terrorists. Battle Valley is due for Amiga release in August.

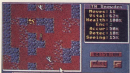


THE AMERICAN CIVIL WAR VOL II STRATEGIC STUDIES GROUP/EA

The latest wargame from US wargaming specialist SSG, Decisive Battles of The American Civil War Vol. II may not exactly roll off the tongue but it's packed with features and options including: MapGen (wargame construction kit) and WarPaint (icon editor), and uses the award-winning Decisive Battles Game System. Out shortly on PC.

PALADIN OMNITREND/ARTRONIC

A mixture of fantasy, strategy and role-playing, Paladin throws you into the world of playing Dungeons and Dragons - Knight and day - as you take a party of followers through 10 quests meeting trolls, zombies and sorcerers along the way. Also featured is a Quest Builder for modifying and creating new scenarios. Out soon on ST, Amiga and PC.



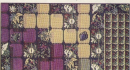
BARBARIAN II PALACE SOFTWARE

Yes, it's finally arrived! Barbarian II on the Amiga, complete with Maria Whittaker on cover, and ingame monster decapitation. Music maestro Richard Joseph has again produced the sampled sounds we've all come to love, as you swipe off the head of an opponent with a satisfying swish of sound. Also out on PC next month.



MAZEMANIA HEWSON

A game for all budding maze maniacs, Mazemania's blend of puzzle and furious action, coupled with 12-16 levels of play, should help keep you amused. Requiring skill and a lot of co-ordination, Mazemania is scheduled for release on Spectrum, C64 and CPC in August, with ST and Amiga versions following shortly afterwards.



CASTLE WARRIOR DELPHINE SOFTWARE/PALACE SOFTWARE

Castle Warrior is the follow-up to the critically acclaimed Bio Challenge (reviewed in Express 288) from the French software developer Delphine Software.

This arcade adventure places you in the guise of Eddard the Brave on an antidote-finding mission to save your poisoned father, Eddard the Good. Yell/Out next month on ST and Amiga.



● The heat is on, in more ways than one. In this sweltering heat, tempers aren't sweet. But the show must go on, just like this song.

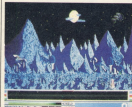
Dark Side from Microstatus - gameplaying hiatus. *Personal Nightmare* gave us no great scare. Logotron's *Star Ray* shows others the way.

(And Rik Haynes the bard can pick up his card(s) - Ed)

STARRAY

LOGOTRON

PC • £29.99dk
Also on ST, Amiga



• VGA: Very Good Attempt - except for the scrolling

After last autumn's CGA PC release comes the EGA/VGA/Hercules update - and a lot better it looks too. So how well does it compare to the other 16-bit outings?

● GAMEPLAY

If you ever played the classic *Defender* in the arcades then you'll know the score with *StarRay* inside out. So much so, that in the States it's going to be released as *Revenge of Defender*. To be fair, there's more to the gameplay than in the original but the aim remains the same: namely to protect installations on the ground while blasting everything that moves - except bones balls, which will supply you with everything from improved acceleration to invulnerability. There are seven missions to get your teeth into, so by the end of the game your finger will be well worn.

● GRAPHICS AND SOUND

Compared to the dreadful CGA version, both VGA and EGA modes deliver good graphics, with VGA winning out of course. Nevertheless, scrolling and sprites aren't really convincing. Parallax scrolling is fast enough but jerky, while the sprites aren't solid enough. Even in VGA they appear as just a bunch of pixels. Sound is as useless as usual on the PC - confined to beeps, beeps and more beeps. When well decent sound cards be handled as standard!

● OTHER VERSIONS

The Amiga version performs the best, with smooth, fast scrolling and impressive stereo spot-effects and soundtrack. The ST outing is well worth a look too.

DARK SIDE

INCENTIVE/MICROSTATUS

Amiga £24.95dk
Also on ST Spectrum, C64, CPC and PC
versions published by Incentive

Dark Side is the first game on the new Microstatus label from Microprose, and marks the second conversion of this popular arcade adventure to 16-bit format.

● GAMEPLAY

Placed in the role of a troubleshooter, you'll have to explore the Dark Side of the moon Tricupid, in order to find and disable the energy matrix which is feeding Zephyr, a massively destructive weapon designed by the Kefans to destroy your peace-loving people on the planet Evinia. Confused? You certainly should be...

● GRAPHICS AND SOUND

We've obviously been spoiled by *StarGlider II* and its

excellent solid 3D graphics, because the Freescape landscape system on the Amiga seemed far less impressive then when we first released it on the 8-bit micro's. However, they're more colourful, faster and polished than before.

Audio isn't bad either, with either soundtrack or special FX to choose from.

● OTHER VERSIONS

Dark Side on the Spectrum, C64, CPC again proved the classic combination of puzzle-type gameplay and the innovative Freescape technique, a far more remarkable achievement on the 8-bits considering their hardware limitations.

● EXPRESS VERDICT

Although not quite as outstanding as its 8-bit counterparts - perhaps we were expecting too much - Amiga Dark Side still manages to produce a playable game thanks to its assorted range of puzzles backed up by the prize-winning Freescape visuals.

★★★★

Rik Haynes



• Take a walk on the Dark Side...



● EXPRESS VERDICT

There aren't too many shoot-'em-ups for PCs, so with the appearance of VGA *StarRay* you're probably talking about the best blaster available for that machine - even though it's just a good reworking of a ten year old coin op game.

★★★★

Andy Storror

PERSONAL NIGHTMARE

HORRORSOFT.TYNESOFT

Amiga • £29.95dk
Also on ST
Out soon on PC



• Frighteningly good intro sequence

Personal Nightmare horrifically appalling or frighteningly addictive?

● GAMEPLAY

Personal Nightmare is a three-disk menudriven graphic adventure incorporating many of the standard "adventure" options, with more than a few surprises for the bold adventurer.

● GRAPHICS AND SOUND

A great intro sequence takes you into start of play, all the features of the genre are here: eerie sound spot effects, limited character animation and plenty of locations to explore.

● OTHER VERSIONS

We haven't seen the five-disk ST version yet, and PC *Personal Nightmare* will be released sometime next month.

● EXPRESS VERDICT

Personal Nightmare is a promising start to a newish software genre, which thankfully owes nothing to the disgusting Jack The Ripper style of sensationalism. It's a touch too expensive though.

★★★★

Rik Haynes



• Keeping up with Joneses as you start play

Making a debut for a new software label based around Horror games, "starring" the Elvira vamp from a popular American TV Horror show, is

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Worming his way into your affections

Rik Haynes gets up-to-date with new versions of games previously reviewed in Express



• No pause in the action

FORGOTTEN WORLDS CAPCOM/US GOLD

CPC • £9.99ck • £14.99dk • Amiga version reviewed in Express 30 • Also on Spectrum, C64, ST

Like Silkworm, a one or simultaneous two-player horizontally-scrolling shoot-'em-up, Forgotten Worlds features colourful graphics but falls down a little in the playability and speed departments.

★ ★ ★



• Silk-smooth scrolling on the Spectrum?

SILKWORM VIRGIN GAMES

Spectrum/C64 • £9.99ck
£14.99dk • Amiga version reviewed in Express 32 • Also on CPC, ST

This standard slice of horizontally-scrolling shoot-'em-up action has been successfully converted over to the Spectrum and C64. Perhaps a tad too easy on the Spectrum, both versions of Silkworm are undoubtedly great fun to play.

★ ★ ★



• C64: Jeep thrills - and spills

MICROPROSE SOCCER MICROPROSE

Amiga • £24.95 • C64 version reviewed in Express 4, Spectrum version reviewed in Express 27 • Also on CPC, ST

Microprose Soccer maybe on top of the C64 and Spectrum football-sim 1st Division, but we're afraid the Amiga version's relegated to Sunday League when compared to the superlative Kick-Off from Amco (Reviewed in last week's Express).

★ ★ ★



• Where's the Road Gullit player then?

BATTLECHESS ELECTRONIC ARTS

ST • £24.99 • CPC version reviewed in Express 10 • Also on Amiga

A remarkably accurate conversion from the Amiga, ST Battlechess contains excellent visuals and evens matches the Amiga's sampled sound effects. The game has a great sense of humour, but may not have strong enough play for the hardened chess player. Well worth a look, though.

★ ★ ★



• And Karpen unexpected encountering his opponent's knight to queen's 4 etc etc

VINDICATORS TENGEN/DOMARK

Amiga • £19.95 • ST version reviewed in Express 23 • Also on Spectrum, C64, CPC

More or less a straight port over from the ST, Vindicators on the Amiga is slightly disappointing in that the Amiga's superior sound quality hasn't been put into effect. That said, it's an accurate conversion of the coin-op.

★ ★ ★



• All tanked up on one star

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FROM RUSSIA WITH... AN INVOICE

Express has been as concerned as anyone about recent reports that Russian KGB agents have been infiltrating UK Computer Shows. In this exclusive report, a Russian KGB agent whom we shall 'Tvan' has smuggled us this highly secret call from Moscow. It gives a unique insight into the state of the computer in the Soviet Union...

Hello, all my friends in England! How I look forward to coming to one of your computer shows again. The flight from Moscow isn't so good; it's just-in-4s are like Aniglas. I think they always look about to crash. As you know, quality control isn't a strong point of Soviet manufacturing. Car factories are built on top of hills because that's the only way we can be sure to get them started. And it's the same with our Soviet-made computers: Russian keyboards, you need the muscles like a shotputter to type. Our Aeroflot hedysms must have trained as copy typists. And our digital watch batteries made in Leningrad only last two hours - maybe it's so you don't know how long you've been queuing for the bread and potatoes.

Which is why Mikhail Gorbachov was so keen on his last visit to meet Alan Sugar and Clive Sinclair - he thought they must have a lot in common.

System error?

As a Russian, people often ask me what it's like to live in a one-party state with a gagged press ruled over by a virtual dictator and doddering, bumbling old men who are intent only on lining their own pockets. And I tell them: it's actually not bad, and the English don't seem to be mind at all.

We can get most State-of-the-Art technology here. We have all the very latest computers that you have - Apple II, PCs, Orics, Thoms, 286s. It's hard to get the CPC and Electron are coming to the next Moscow computer show. Actually I'm joking. We have the MSX too.

My job is going to computer shows and spying. The Soviet Union needs technology and it's my job to come and get it. On my first trip, in my innocence, I obtained some secret details of the computer control systems for your new jet fighters. My KGB boss was so furious. Get me something useful, he said. Like Spectrum games, C64 budget cassettes, PD catalogues.

I asked him if he wanted military secrets. 'Sure,' he said. I want cheats for Balance of Power, Universal Military Simulator, Bordenio, and infinite lives pokes for F14 Tomcat on the PC.

The reason is our new image. The Evil Empire is out and arms reduction, troops withdrawals, increase in technology etc are in. The soldier boys are coming back from Afghanistan and

China and they need something to do. Though it's taking them a while to cotton on to the fact that in computer shoot-'em-ups you don't have to queue and sign out each bullet.

Bring down the wall!

Everyone is delighted about Tetris going from the USSR Academy of Science to the West. It's brought in so much money for Alexei, the designer, that he now has three pairs of Chinos! I remember the day when he was caught playing it instead of working on plans for a nuclear reactor tower. Poor Alexei! He was hauled up before the Academic Committee with a face as white as a Gorky Park snowdrift. He thought it was off for a trip away and a basket of salt in the air - in Siberia, not on the Black Sea coast. Imagine his surprise when he was commended for it and told his game was being licensed to the decadent capitalist West.

The thing is, Alexei only wrote it as a protest - a sort of bitter satire on wall-building and iron curtains. The boys Shostakovitch and Mussorgsky! But he thought quickly when they asked him what it was about. 'A symbol of, er, perestroika (reconstruction)', he said. And then, under his breath, 'that is, a load of old blocks'. They swallowed it!

Shopping all over the world

Desktop publishing is really taking off here. The authorities were worried at first about samizdat underground counter-revolutionary newsletters organising Solidarity-style campaigns, propagated by supporters of Boris Yeltsin, using Tassov or their Spectrum.

We didn't have worried. By the time anyone has quashed for the paper, locked in to the DTP program to make the alphabet Cyrillic and managed to get a page out of their smuggled budget Citizen printers, the reforms they're calling for have gone through anyway. Talking of the man in the street, I was interested to hear of your home shopping computer terminal plans. It should revolutionise shopping here, and get rid of all those queues at the Bread Shop and Grocery Store, so it will really bring the USSR into the computer age. I'm on the waiting list for one already and the first will be delivered in June 1996. I hope it isn't the 15th as the plumber is due to come then...!!

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The Times' William Holmes reviewing a Horizon documentary on the computer

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